# THE IRON AGE

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## Forging Versus Heat Treatment of Steel\*

Improper Initial Heating Responsible for Difficulties Which Careful Heat Treating Cannot Rectify—Human Element in Forging

BY D. K. BULLENS

No small percentage of the difficulty encountered in heat-treatment operations is due to improper forging methods, and ofttimes the heat-treatment operation is nothing more than a useless effort or attempt to get something out of a forged piece of steel that is not actually in it. Thus, the steel man is often blamed for the absence of quality which he actually put in it, and the heat-treatment man is blamed for his lack of ability to locate such qualities, which he properly assumes to exist, but which, nevertheless, the forge man took out by poor heating, unknown to himself or the other two.

It usually happens that neither the steel manufacturer, nor the man in charge of the forging, nor the man in charge of the heat treatment considers this point very thoroughly or investigates it properly. The result is that the forge man unconsciously continues to furnish the ground for trouble, leaving it for the other two to fight out. Much of the data gathered from tests and the conclusions drawn would appear in a different light if this very important operation of forging were given proper attention.

Initial Heating of the

Any heat-treatment process that does not involve thorough consideration and control of the initial forging operation is incomplete. Heat treatment begins with the heating of the steel preparatory to forging and ends with the final cooling following the last heat-treatment operation, assuming, of course, that the steel itself is in proper condition with reference to uniformity in its chemical analysis and homogeneity of metal when charged into the forge furnace.

Many of the irregularities in heating for forging are common to the mill operations of heating

for rolling, and a great deal of the difficulty due to lack of uniformity could be eliminated by a better control of the heating in the mill when the ingots or billets are rolled, and in the forge shop when the stock is formed into shape.

The heat-treatment specialist cannot be expected to get out of a piece of steel, or to put into it, something that the forge heater has taken out with improper heating methods. His work is influenced greatly by the heating operations in the forge shop and the rolling mill and he properly cannot claim to have control of, or be required to control and as-

sume responsibility for, the heat treatment of his steel unless such control extends at least to the forge shop and, if need be, to the rolling mill.

This important question of initial heating has been considered altogether too lightly and the marked improvement that has been effected by special investigation along these lines indicates the necessity for improved methods and equipment for heating in the forge shop and rolling mill, neither of which have kept pace with, or are up to the standard of those employed for, the heat treatment of the steel after it is forged.

This condition is illustrated by the test pieces shown in Fig. 1, together with the photomicrographs in Figs. 2 to 8,

and the following physical test results:

Tensile Elastic Elonga- Reduc-

Piece No.	Strength, Lb. per Sq. In.	Limit,	Per Cent	tion	Fracture
3 4	. 88,000 . 80,500 . 96,750 . 86,000	50,500 50,000 55,750 51,250	14.0 11.0 22.0 27.5	28.5 13.5 41.9 39	Angular; dead Burnt Dead; ½ cup Dead; angular
6	. 85,750 . 95,900 . 81,650	51,750 54,000 54,000	22.0 12.0 32.5	34.1 36.5 65	Granular Granular Bilky; full cup

All of the shafts represented by these seven test pieces were made from the same heat of steel, were

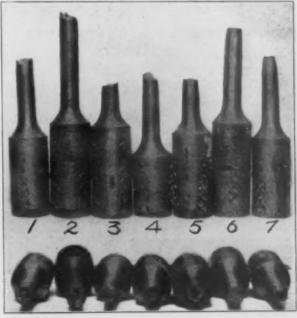


Fig. 1—Fractures of Test Pieces of Seven Shafts Forged from the Same Heat of Steel, Showing the Effect of Treatment

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of approximately the same size and were subjected to the same amount of working during forging, and all were treated in the same manner at one time to meet the same specification. The steel represented by test piece No. 7 was properly forged; the fracture after heat treatment shows a perfect cup, with large reduction, and that the steel received the proper heat treatment is borne out by the photomicrograph and the physical-test results. The first six tests indicate a wide variety of improper forging methods; some of the fractures were granular and showed "fire," some were "dead" and showed no life; all showed severe overheating.

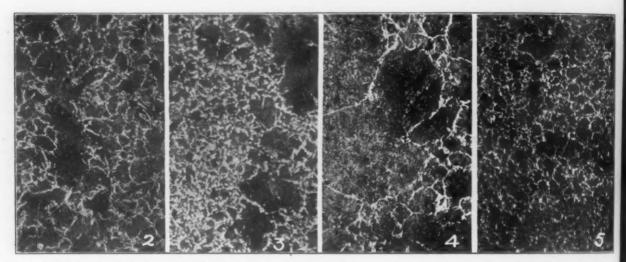
Such conditions are by no means exceptional even in large plants where there is apparently every facility in the form of equipment and supervision—except for heating in the forge shop.

#### Heating for Forging

Two of the weak links in forging practice from the metallurgical end are the lack of uniformity and the temperature of the heats. As a rule, the temperature has been used, the steel thoroughly saturated, and the fire soft and a little high in carbon to reduce oxidation, the men will find that the steel actually will forge more easily and a greater production be obtained than under the old method. With proper saturation it also will be found that much lower temperatures may be used and that working conditions will be made more bearable. Such a practice not only is better for the man but also is much better for the steel from the standpoint of quality. It has the added advantage of being less costly, because it is almost impossible to effect these improvements without at the same time decreasing the operating cost.

#### Finishing Temperatures

The finishing temperature as well as the maximum temperature to which the steel has been heated for forging has a great bearing upon the final structure of the steel, and therefore upon the subsequent heat treatment. The heating and forging should be adjusted so that the finishing may be



Figs. 2 to 5 Are Photomicrographs of the First (Four) Test Bars of Fig. 1. They are slightly reduced from an original of 100 diameters

temperatures are altogether too high, with the result that, while the surface is apparently hot, there may be actually a "bone" on the inside. It is common practice to see drawn from a furnace a billet that will drip and yet when placed under the hammer there will be indications of lack of heating on the inside. It is the inside of the bar that determines the physical properties of the final forging and not the outside; there is nothing gained in quick wash or surface heats.

The factors so frequently mentioned—temperature and time-mass-surface—are just as applicable to forging work as to heat treatment. Slow, soft, soaking heats, affording the steel plenty of time to heat up, are more desirable than the quick, higher heats. The idea should be to maintain the temperature of the furnace as near as possible to that actually required to soften the steel to the extent necessary for its proper shaping in relation to the capacity of the hammer or press, and to give it plenty of time in the furnace to soak thoroughly at this temperature without overheating or oxidizing the outside.

If the judgment of the heater cannot be relied upon, as is often the case with men accustomed to hammering "mushy" steel or working on a tonnage basis and if there is not a man continually to supervise the heats, then the only alternative is to install recording pyrometers at each furnace and that temperature maintained which has been found the best for the particular work in hand. If the proper

completed at temperatures as near the critical range as possible. The higher the initial heating and finishing temperatures, and the smaller the amount of working which the steel receives, the larger will be the grain size and the greater the difficulty encountered in the subsequent heat treatment.

Figs. 9 and 10 illustrate most plainly the difference between proper and improper heating methods and their effect upon the steel. The photomicrographs were taken from large shafts of the same size, with the same amount of reduction, and forged by the same men. The same tonnage system of wages operated in each case. The steel of Fig. 9 represents the average result obtained by their old methods; that of Fig. 10 by heating in a furnace properly designed and operated so as to produce the soft heats, lower temperature and thorough saturation discussed above.

#### Forge Furnace Design

The general design of a forge furnace is far below the standard of heat-treating furnaces and is a point usually left to the forge man or to a brick-layer. It is common to see furnaces hot on one side and cold on another, or hot on the top and cold on the bottom. Also to hear complaints on lack of ability to heat steel properly in a furnace in which the burners blast directly against the stock which naturally keeps the stock nearest the burner cool and heats the pieces farther away. This is a common fault in many oil-fired forge furnaces—

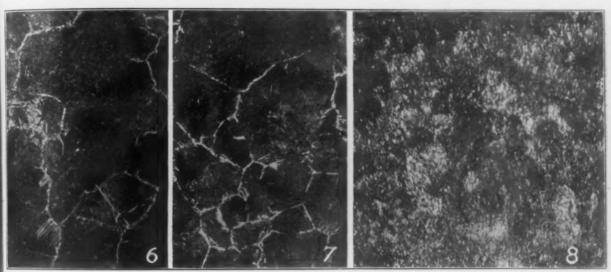
particularly those of "home-made" design, although it must be said that the products of many furnace builders are not free altogether from this criticism.

In designing and building a forge furnace the unfortunately common method appears to be that of building a box with working openings at one end, digging a hole somewhere in one side through which a burner is inserted, providing one or more holes in the roof, and calling it a furnace. All this is done without any regard for the generation and proper application of heat to the stock and without provision for the control of the air entering the chamber or control of the hot gases leaving it.

While it is possible in many instances to introduce through one burner all the fuel required to produce sufficient heat, it should be borne in mind that in a furnace of any considerable size the heat is apt to localize and the blast is strongest directly in front of the burner. It is necessary to obtain not only sufficient heat but also to apply it uniformly and to eliminate the evil effect of direct blast close

chamber and the door closed, then special vents may be employed, but these should not be located in a position which will permit the gases to "short circuit" out of the chamber without first having passed around the steel in the chamber and in contact with the chamber floor.

Whether the furnace is operated with the door up or down, one of the best methods is to make provision for the gases to pass out from the chamber at the chamber floor level and discharge from the furnace without blasting into the faces of the operators. Such construction decreases the effect of the cold floor or hearth by bringing the hot gases in contact with the chamber floor; decreases the heat loss through the "short circuiting" of the hot gases directly through roof vents occasioned in the usual construction, and finally if the outlets are properly located in relation to the design and operation of the furnace as a whole, a more uniformly heated product will be produced. In practice, these vents should be closed almost entirely when loose brick



Figs. 6 to 8 Are Photomicrographs of the Bars 5, 6 and 7 of Fig. 1. They are slightly reduced from an original of 100 diameters

to the stock. This cannot be worked out with set rules or formula; it is necessary to determine the number of burners and their location from a layout for each individual furnace.

Every cubic foot of air entering the furnace should be under control, and unless this is done it is unreasonable to expect proper operation, because excessive fuel consumption, oxidation, irregular fires and uncomfortable working conditions for the men usually follow. Ample space should be left on each side of the door openings so as to provide opportunity for good circulation of the hot gases around the pieces to be heated.

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#### Forge Furnace Operation

The average forge heater appears to believe that his furnace is incomplete without one or more vents in the roof, and its operation imperfect unless flame is shooting out of the vents and working openings. On the other hand, if the furnace is properly designed and operated so as to produce soft "lazy" heats, the necessity for venting is demanded only by the need of balancing the pressures between the inside and outside of the furnace, and carrying off the gases in order that a fire can be maintained. If the billets project through the door opening, the opening should be closed with loose bricks piled around the billets. When working in this manner the vent will be through the openings between the bricks and extra vents are unnecessary.

If the billets are introduced entirely within the

are employed around a piece projecting through the furnace opening, and only partially opened when the working opening is covered by a door. The opening must be varied to suit the requirements of the fire, being greater in starting up than when the furnace is up to heat.

The outlet area for the exit of spent gases should be held to a minimum and damper should be provided and continually regulated to vary the outlet of gases. A forge furnace in this respect is entitled to the same consideration as a kitchen stove, not only for the proper generation and control of the heat, but because in one case as in the other, fuel consumption varies with the outlet area.

#### Human Element in Forging

The strongest language that could be employed to describe the general average heat-treatment equipment, the methods of heating and personnel, as they are actually known to exist, would be altogether too mild and ineffective for a proper description of the heating methods and equipment in the majority of forge shops in the country. As in the case of machine work, the design of the hammers, presses and other machine equipment has made rapid strides forward, but the two most important factors of the forging operation from the metallurgical end—the man and the furnace—have either stood still or gone backward.

Many well-informed and experienced men claim that the caliber of forge men to-day is not what it

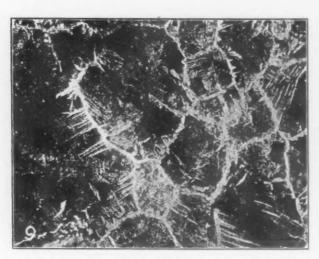


Fig. 9—Photomicrograph of the Structure of a Large Shaft Improperly Heated. It has been reduced about one-fourth from an original of 100 diameters

was years ago, and that a better quality of work was produced with the old-fashioned and comparatively inefficient coal and coke furnaces, though at a higher cost, than at present with furnaces burning oil or gas. There appears to be something in this statement, particularly in view of the high quality of work turned out in Europe, where the use of high-speed machines, oil and gas fuel, and "efficiency" production methods are not as prevalent as here.

If such a difference actually exists it can be traced invariably to the personnel of the men or to the design and operation of the furnace, because, like in most operations involving the skill of the operator as against the fixed movement of a machine, quality reflects the man and his knowledge of the work. But even so, we can and should be able to do better with fuels so closely linked with uniformity of temperature, steadiness of operation and ease of control. If we do not, then it is up to the man or the furnace and not to the hammer or the fuel, which is in itself a good argument for improvement of the heating and human equations in the operations.

It appears to be almost impossible, or at least commercially impractical, to build forge furnaces of proper design that will produce and apply heat in the manner demanded by the requirements of modern specifications, and expect them to stand the abuse and, in fact, the brutal treatment given by the ordinary forge furnace heater. The design of the furnace to-day appears to be made to fit the man, although the proper procedure would appear to be that of designing the furnace as it should be and adapting the man to it.

The commercial value of automobile trucks would never have been realized if men had not been taught how to operate and care for them, and the furnace and methods necessary to bolster up our weak forging practice will not be commercially possible until our manufacturers realize the actual necessity and profit that will demand and follow the one factor that can retard their development—the human element.

The apparent advantages of the motor truck were not sidetracked by the fact that it was necessary to teach men how to operate them, and yet there is just as much, if not more reason why men, and if necessary a different type of man, should not be taught how to properly heat steel. The motor truck had the advantage of being new and free from the precedent, tradition, prejudice and custom that hampers the development of the heating end of forge work, which is just as im-

portant as any other branch of heating in metallurgy and exerts much influence over other operations.

The proper heat treatment of steel is not possible without proper heating in the rolling mill and forge shop and forgings cannot be produced as they should be without good men and good furnaces. Heating is just as much of an art or trade as molding or plumbing or driving a motor truck, and while trained men are demanded for these operations, it seems as though any kind of a man is good enough for the expensive operation of forging and treating.

#### Weak Link in the Heat-Treatment Chain

This factor is the weakest link in the chain of heat-treating operations and must be strengthened, not only because it is necessary from the technical side, but because it is profitable from the commercial side. The time and money that can be saved in scrap, fuel, power, repairs to furnaces and other equipment, machining operations, lost business due to defective material, etc., should certainly be sufficient inducement to bring about the change, the necessity for which has been too long overlooked and the possibilities too little realized.

There should be continual supervision of the heating operation in order to check the temperature, time of heating, uniformity of heat throughout the chamber, the force of the fire, the amount of waste gases, the oxidizing effect of the fire, the

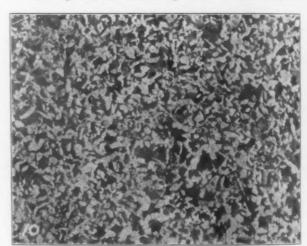


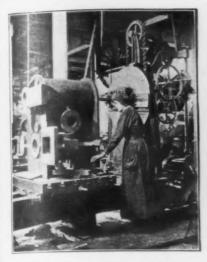
Fig. 10—Photomicrographs of the Structure of a Large Shaft Properly Heated. It has been reduced about one-fourth from an original of 100 diameters

consumption of fuel and power and the repairs to furnaces and other equipment. Personal supervision is made absolutely necessary by the very nature of the work. Pyrometers and the like are desirable and at times necessary, but vital errors will creep in, even though such appliances indicate they do not exist.

The practice of delegating one or more men to supervise the work of heating by checking the points above enumerated, under the direct charge of the shop foreman, is steadily gaining as it should. When properly followed it has invariably led to good results in the form of better product and saving in scrap, lost time, fuel, power, maintenance and better working conditions for the men.

Forging has been neglected too long, and it would seem as though the technical and commercial possibilities are well worth the effort necessary to bring them about.

The first sheet of steel was rolled last week in the new plant of the Indiana Rolling Mill, Newcastle, Ind. The former plant was demolished in the tornado of March 11.



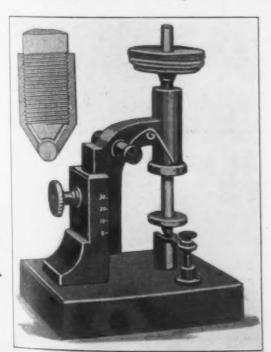




The Character of Work to Which Women Have Now Been Called in England Is Indicated in the Accompanying Reproductions of Illustrations in Engineering, of London, Showing Women Engaged in the Machining of Cylinders of Engines, These Incidentally Required for Mine Sweepers

## The Pellin Hardness-Testing Apparatus, a French Device

THE Pellin hardness-testing apparatus has attracted some attention in England and has been described by Engineering as follows: It is based upon the Brinell dynamic method and has been designed for the hardness-testing of the different metals used for all in-dustrial purposes. The apparatus is mounted upon a cast-iron base plate on which is fixed a forked spring clamp, which holds the sample to be tested in posi-A dovetailed slide can be raised or lowered so as to vary at will the height of fall, its displacement being regulated to tenths of a millimeter by the aid of a graduated scale. The slide is provided with an arm having a cylindrical housing in which a steel rod slides freely but without play. The housing ends in an annular electromagnet connected to one of the terminals, as shown in the illustration. The rod is provided at the top with a disk designed to carry a variable series of weights, so as to produce any variation in the ball impression under shock. At the lower part of the rod is fitted a soft iron plate, the object of which is to cause the adhesion of the whole rod system when the current from a battery is closed on the electromagnet. The steel ball, 2.5 mm. (0.0984 in.), is held in a holder underneath the soft iron plate. This holder



The Pellin Hardness-Testing Apparatus

is shown in the upper corner of the illustration. It is easy to cut off the current instantly between the electromagnet and the soft plate by means of a circuit breaker fitted to the base plate. The rod, being liberated, acts as a hammer and by falling upon the specimen under test the ball forms in this an impression, the diameter of which varies according to the hardness of the specimen and the weights with which the disk has been loaded. The makers of the machine are Ph. and F. Pellin, 5 Avenue d'Orleans, Paris.

#### Meeting of Tungsten Ore Producers

At a recent meeting in San Francisco of the leading producers in the United States of tungsten concentrates a schedule of prices for scheelite ore or concentrate was adopted, effective May 1, 1917. Officials representing three Colorado and four California producing companies were present. A report of the meeting in the Engineering and Mining Journal, May 12, 1917, says that quotations were based on 55 per cent concentrate. The schedule prepared by the several companies for their individual use includes a minimum of 40 per cent and a maximum of 70 per cent WO, and prices ranging from \$14 per unit for the minimum per cent and \$23 per unit for the minimum per cent and \$23 per unit for the maximum per cent; the basic price, \$18.50 for 55 per cent and \$20 for 60 per cent. The price per ton for ore of minimum per cent is \$560; maximum, \$1,610. Ore of 55 per cent WO, is scheduled at \$1,017.50 per ton. The producers are not bound by the decision of the meeting as to the schedule of prices, which is subject to change without notice, or as to the terms of sale or packing. But it is expected that the leading producers of the country will maintain generally uniform prices and act in harmony in other matters discussed by the meeting.

by the meeting.

It was stated that the freight rate from Boulder to Pittsburgh is about 25c. per unit and from California points to Pittsburgh and New York districts about 45c. per unit. Importations of tungsten in the first quarter of 1917 were 1185 tons. Of this amount 300 tons was in turn exported. The average importation is about 200 tons per month. The average production in the United States is about 500 tons per month, of which more than one-half is produced in the State of California.

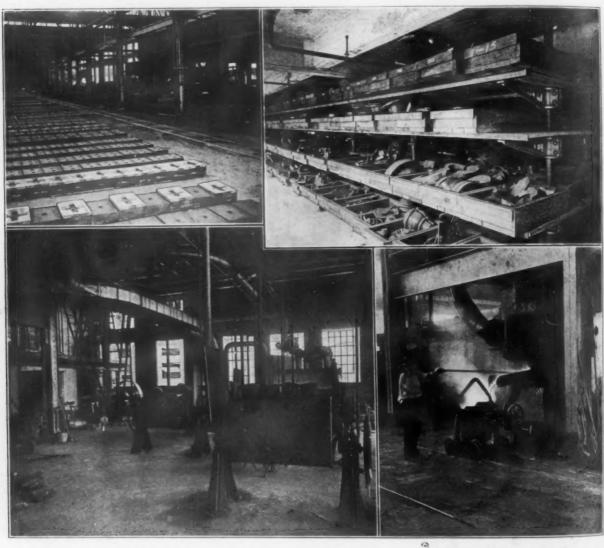
An automobile tried to push a locomotive off the track, according to a letter recently received by the Chisholm & Moore Mfg. Company, Cleveland, from the superintendent of the Pennsylvania Railroad to the effect that "on Jan. 8 last, while our engine 7749 was passing over East Fifty-third Street very slowly, speed about three miles per hour, it was run into by your automobile truck No. 131,199, damaging our locomotive to the extent of \$1.31." It is stated that the truck suffered no injury and the \$1.31 was paid.

## Foundry for Making Small Castings

Ladders Eliminated in Lunkenheimer Pattern Storage Building — Special Horizontal Non-ferrous Metal Melting Furnaces

THE new iron foundry and pattern storage building of the Lunkenheimer Company, Cincinnati, contains several features in foundry construction. Probably one of the most interesting is the installation of a creosoted wood block floor in the foundry proper and also in the machine room. The plant has been in operation for a num-

The foundry building proper is 100 x 280 ft, and on the east side there are two 40 x 50 ft, extensions in one of which there are a number of W. W. Sly Company's tumbling machines. Back of this extension is the washroom, which contains a sufficient number of steel lockers for all employees. This washroom is also equipped with several



Ladle Racks at Each Column in the Foundry, Storing Patterns in a Room Having a Low Ceiling, Melting Non-ferrous Metals in Special Horizontal Furnaces Instead of Crucibles and Tapping the Cupola into Small Ladle Cars Running on Industrial Tracks Are Features of the New Lunkenheimer Foundry

ber of weeks and this floor has proved satisfactory in several respects.

In the former ferrous foundry that the company operated, a brick floor was used and when hot metal was spilled it almost invariably caused the brick to crack. There was also trouble caused by the edges and corners being chipped off and the renewal of the brick floor proved to be a more tedious process than in repairing the wood floor. Also the use of a wood floor in the foundry enables it to be kept cleaner and at the same time the molders insist that it is much easier on their feet; this is obviously true of those operating molding machines.

shower baths and an attendant is provided to devote his entire time in keeping the locker and wash rooms as well as the different toilets throughout the building in a sanitary condition.

The extension next to the locker room houses an Ingersoll air compressor that furnishes air for the various molding machines and for different purposes throughout the foundry. The core overs are also in this extension. Located inside this addition are two 10-ton Newten cupolas, supplied with air by a 30-hp. General Electric blower. The cupolas are close enough to the foundry proper so that the metal may be discharged into mother ladles,

which are conveyed to different parts of the foundry over industrial railway tracks. On account of the small sizes of castings, hand pouring is employed almost entirely.

In this same annex there are four horizontal melting machines of the company's own make, which have a capacity of 1200 lb. each. These machines were constructed so that they could be operated either with gas or crude oil as fuel, and the plain cylindrical shape of the drum enables them to be quickly relined when necessary. They are used only for special mixtures where only a small quantity of metal is to be melted and the cost of maintenance as compared with crucibles has been proved to be considerably lower.

There are four 20-ft. bays in the foundry proper. The two on the east side are served with six Shepard electric traveling hoists with the regular foundry type controllers. A number of Peerless chain hoists are used in the other two bays. One especially interesting feature about the foundry is that 95 per cent of molding is done by machine. In fact, all of the equipment is arranged so as to minimize transportation costs of both raw and finished material. At each column in the foundry dividing the different bays there are water lines as well as compressed air lines, and on the west side of the bay where a number of vibrating machines are located, air can be obtained at every few feet.

The pattern storage building, which is 40 x 100 ft., four stories, and of reinforced concrete construction throughout, represents an idea that is unusual in the construction of buildings of this kind. The distance from floor to ceiling is only 81/2 ft., so that it is unnecessary for the stock clerk to use ladders of any kind to obtain any pattern. A regular card system is kept and the patterns are stored in numbered sections, thus minimizing the delay when an order is received by the stock keeper for a particular pattern. This building was also planned with foundations sufficiently firm to support two additional floors, in case they should be necessary later. Every precaution against fire has been provided both in the foundry and in the pattern storage building, each being provided with automatic sprinklers.

At the north end of the plant there is a concrete storage shed having bins for the receiving and storage of all material, such as pig iron, coke, sand, etc., and a spur from the main switch to the Lunkenheimer plant proper enables all of these materials to be unloaded directly into the bins provided. A track scale is also located under this shed and every carload of material is weighed. Finished castings are conveyed to the main plant in trucks, but it is planned to handle these in an overhead tramway at a later date.

### New Uses for the Rennerfelt Furnace

New uses are being found for the Rennerfelt electric furnace. The Central Steel Company, Massillon, Ohio, is to install a 1-ton furnace for melting ferromanganese and the Chile Exploration Company, New York, will put in a 1000-lb. furnace for making magnetite electrodes (used in reducing copper ores), which were formerly obtained from Germany.

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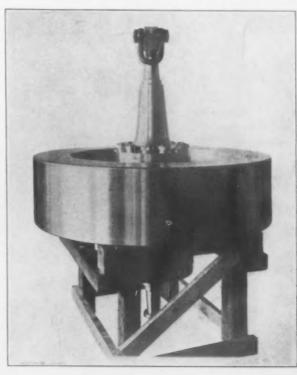
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Two furnaces, one in Sweden and one in Finland, are to be used in melting gray iron scrap for pouring iron castings. The melted material will be brought to the right composition by proper additions, the new departure being undertaken to avoid the use of high-priced pig iron.

Besides the above installations, 11 other furnaces have been sold for use in making steel in Norway, Sweden, France, Denmark and Finland.

## A Difficult Steel Casting

I'T would not be generally supposed that the steel casting, here illustrated, would be a difficult one to make, but the conditions to be met are so unusual and severe that extreme precautions were necessary to meet them. It represents a 60-in. rotor, weighing 10,000 lb., which has been installed in a large ocean-going yacht as part



Large Steel Casting for a Stabilizer for an Ocean-Going Yacht

of a Sperry gyroscopic stabilizer. As soon as this large casting was assembled, after extensive machining, it was found that no balancing at all was required. This demonstrates that the casting must be as near absolutely flawless as possible and of uniform texture and metal throughout, for the slightest blow hole or imperfection would have thrown the wheel badly out of balance during the high-speed runs. The making of so nearly a perfect casting is ar unusual achievement and involves careful study of both the molding and metal problems. It was made by a large Eastern steel foundry.

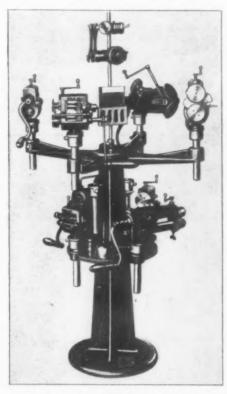
#### Zirconia as a Neutral Lining for Steel Furnaces

The lining of a steel-making furnace with zirconia is covered by a patent (U. S. 1,217,972), issued March 6, 1917, to George G. McMurtry, deceased. The patent is the property of the United States Steel Corporation. The expectation is that a zirconia lining would be neutral and that both acid and basic processes of making steel could be carried on in such a furnace. The advantages are manifest; but while limited experiments have tended to substantiate the theory, not enough of the mineral has been obtainable to try out the idea on a commercial scale. It has been found, however, that zirconia brick have outlasted silica brick when placed side by side in a very hot part of an open-hearth furnace.

A mortgage for \$5,000,000 has been filed at Mount Vernon, N. Y., by the National Conduit & Cable Company with which the National Brass & Copper Tube Company has been consolidated. The companies have property at Hastings-on-Hudson and the mortgage is to secure an issue of gold bonds, the proceeds of which are to be used for increasing manufacturing facilities to handle munitions contracts which the company has in hand for both the Allies and the United States Government.

## Revolving Sheet Metal Machine Standard

A revolving standard for sheet metal machines has been placed on the market by the Peck, Stow & Wilcox Company, Cleveland. It is designed to provide working space for from one to four operators, as well as storage facilities for additional machines. The height



Four Sheet Metal Machines Are Held by a Revolving Turret, Thus Enabling from One to Four Operators to Work at the Same Time, While Storage Space for Additional Machines Is Provided Underneath

from the floor to the working edge of the rolls is approximately 40 in., it being possible to raise or lower the machines to suit the operating convenience of either short or tall operators.

The revolving turret holds four machines. It may be locked in any position by a conveniently located lever and room for one to four operators is provided. The machine holders on the upper portion of the standard can be lowered, raised, or revolved to suit the operating convenience of the workmen. The lower turret is stationary with facilities for holding four additional machines. This is designed to provide a place

for keeping machines that are not in use where they will not be damaged. When it is desired to remove one of the machines from the upper turret and replace it by one that is mounted underneath, this, it is stated, can be quickly done. The lower turret also supplies a shelf for holding oil cans, tools, etc. Midway between the two turrets are located two additional posts supported by brackets and intended for machines that are too large to fit in the smaller turret holders.

## Machinery Frosting and Spotting Tool

For frosting and spotting finished machinery the Jones-Mowry Company, Jackson, Mich., has designed a special tool. The tool consists of two steel tubes and the rod holding the cutting tool. Knurling on the outer tube gives a hold for the hand while the work of so-called frosting is being done. The inner tube is of



The Outer Tube of This Tool for Frosting and Spotting Finished Machinery Is Knurled to Provide a Hand Hold, While the Rod Containing the Cutting Tool Is Given the Necessary Vibrating Motion for Cutting by Moving the Handle Up and Down

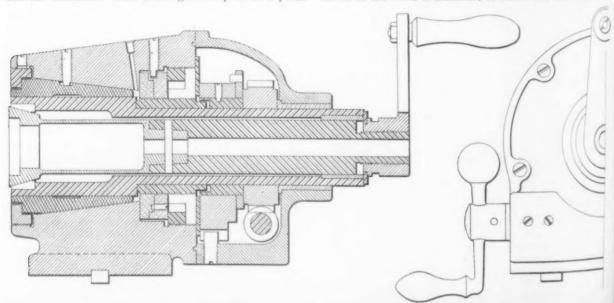
hardened steel and has an angular groove in which a pin attached to the central rod travels.

In operation the tool is held at an angle of approximately 45 deg. The blade rests on the surface to be frosted and by moving the handle up and down the necessary vibrating motion for cutting is given to the blade. A great variety of designs, it is explained, can be obtained by honing the tool in different ways.

## Thread Milling Fixture for Shells

A fixture for producing threads on shrapnel and other shells is being manufactured by the Hall Gas Engine Company, Inc., Bridesburg, Philadelphia. It is designed for attachment to a lathe or milling machine and can be employed for producing either internal or external threads on brass, aluminum, steel or other metals. In addition to being used for munitions work, the fixture is adapted for automobile, firearms, talking machine and similar plants producing interchanegable parts. Minute accuracy of adjustment for diameter and lead is claimed, as well as elimination of loose joints and provision to insure sufficient lubrication and protection against the entrance of dust.

The fixture is used in connection with a cutter having several parallel rows of teeth so that a single revolution of the work is sufficient to finish the thread. The



The Work to Be Threaded Is Mounted in the Collet at the Left Which Is Revolved by a Sleeve Upon Which the Lead Screw Is Cut

work to be threaded is held in a collet at the left of the fixture which is revolved by a sleeve upon which the lead screw is cut. The elimination of loose joints and other sources of inaccuracy is claimed to reduce the error between the lead screw and the nut to less than 0.0001 in.

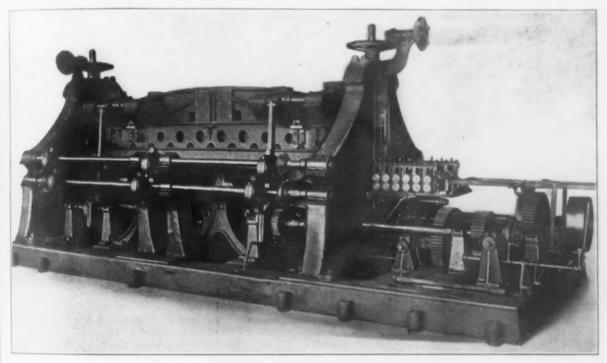
## Automatic Eaves Trough Forming Press

Between 70,000 and 80,000 ft. of eaves trough in a 10-hr. day is the output claimed by the O. O. Poorman Company, New Bremen, Ohio, for its heavy-duty combination automatic press. Any gage material may be used, it is stated, the machine being different from the continuous roll machine and not embodying the principles of the old-style hand forming or rolling machine. The output covers either single or double eaves trough or gutter from 3½ to 8 in., inclusive, of either the lap or slip joint type. Interchangeable dies for the different sizes of trough are furnished and are slipped in place at the take-off end.

## High Manganese Slags in Duplexing

The recognized benefit of the presence of manganese in making steel has been emphasized by a patent (U. S. No. 1,223,030—April 17, 1917) granted to F. D. Carney and L. B. Lindemuth, Bethlehem, Pa., intended as an improvement in the duplex process. The patentees state that there has been much difficulty in producing rails and other rolled shapes free from seams or small cracks when made of duplex steel and that often the cause has been traced back to conditions in the openhearth furnace, in even the most approved practice, when treating Bessemerized iron.

To overcome these defects, a slag is carried during the whole refining process in the basic open-hearth furnace, with a sufficient content of manganese oxide to permit of manganese entering the metal, so that the latter at all times during refining will contain about 0.18 per cent manganese and preferably 0.20 per cent or over. To do this the furnace slag must contain not less than 10 per cent manganese oxide.



Between 70,000 and 80,000 Ft. of Eaves Trough Are Produced in 10 Hr. by This Heavy-Duty Combination Automatic Press

Two operators suffice, one for feeding and one for removing the finished product. Sheets, which have been sheared to the proper width, are fed in at one end, and the finished eaves trough is automatically ejected from the opposite end of the machine.

#### Ball Bearing Firms United

Announcement was made lately that the S. K. F. Administrative Company had been formed to manage the Hess-Bright Mfg. Company, Philadelphia, and S. K. F. Ball Bearing Company. The directorate of the Administrative Company consists of Frank A. Vanderlip, Thatcher Brown, F. B. Kirkbride, S. Wingquist, Alexander Carlander, Marcus Wallenberg, a banker of Sweden, and B. G. Prytz, president S. K. F. Ball Bearing Company. Plans are being perfected, it is reported, for increasing plant facilities of the organization. Budd D. Gray, president Hess-Bright Company, becomes technical adviser of the new company, and Mr. Prytz its president.

Storm & Bull, Ltd., Christiania, Norway, dealers in fron and steel, announce the opening of their New York offices in the Woolworth Building, under the management of Thomas W. Schreiner. This branch will be engaged in oversea trade generally, exporting to and importing from Scandinavia, Russia and South America particularly.

In the duplex process the manganese in the pig iron charged into the Bessemer converter is eliminated early in the blow, except where such iron contains from 3 to 5 per cent manganese, which is not a condition existing in this country nor elsewhere except perhaps Sweden and Norway.

The charge to the open-hearth furnace, which is entirely blown metal from the Bessemer converter, excepting ore, alloy and other necessary furnace additions, will contain from a trace to 0.05 per cent manganese. Since both the slag and bath of metal have had their manganese content depleted, iron oxide will be formed and will enter the bath, giving the steel an appreciable percentage of oxide, which in turn destroys to a certain extent the good rolling qualities of ingots cast from it.

In order to obtain such a slag and such an openhearth metal, we introduce into the open-hearth furnace either before or with the charge, or during the refining stage, manganese materials, such as ferromanganese or manganese ore, preferably the latter, in sufficient quantity to produce a slag having the manganese content desired.

Charles Zigman, Winchester, Ky., has sold his scrap iron business to N. Wides of Richmond, Ky., who will operate the business in connection with his Richmond business. Mr. Zigman will engage in business in Cincinnati.

## **ELECTRIC JAPANNING\***

### Different Steps in Developing the Process-Various Types of Ovens Employed

THE term japanning refers principally to the cover ing of wood or metal with a coat of black varnish, which is hardened by baking in an oven. The process as used to-day can be regarded as a step between

painting and porcelain enameling.

Records show that as far back as 392 B. C. the Japanese cultivated a tree belonging to the same family as the sumach, which was tapped when about 10 years old and a grayish white juice drawn off that oxidized when applied to pieces of wood and formed a very glossy and smooth black lacquer. It was not until the fifteenth century that any record of this art is to be found in Europe, and in the seventeenth century the English and Dutch had made it into a regular profession, giving it the name "japanning." The early Japanese product was costly and took considerable time, but articles finished this way were found to withstand the elements for years. When Europe took up the work a substitute consisting essentially of the same constituents as our present day japan, usually an asphaltum base combined with oils, dryers and various oxides, gradually came into use.

The action of this japan consists of two operations, one thermal and the other chemical. The solvent keeps the material liquid until it has an opportunity to spread or flow evenly over the surface to be covered, whereupon it evaporates, leaving a smooth viscous covering. This is a physical process and is brought about by the application of heat. The material left after the solvent has evaporated must be changed from a viscous to an elastic solid. This is accomplished by oxidation, the action being speeded up to give the material a more complete solidification by high temperatures.

This constitutes the chemical process.

#### Present-Day Japanning Practice

Some great strides have been made in shortening the time of japanning operations in the last few years. Formerly 5 to 9 hr. were allowed to complete the baking operation which is now being done in from 30 min. to 1 hr. Even better speeds are anticipated, and, in fact, at the present time laboratory tests have produced perfectly baked japan in 10 min. Here the heat is generated electrically within the part to be japanned, which is not the commercial electric japanning. In this case the oven is heated by energy radiated from the metal of the heating units and only to a slight degree by convection. The electric heating units consist in general of a framework of steel or cast iron supporting insulators on which a resistor, made from a flat ribbon of nickel-chrome alloy, is wound continuously. Where a number of these heaters are employed steel busbars are used, and all connections are mounted on insulators having the same characteristics as those supporting the heating units. The complete heater used in the ovens runs in units of from 21/2 to 10 kw. each. They are small and easily movable, thus enabling them to be placed anywhere on the walls or floor until practically a uniform temperature is obtained.

The control of temperatures in japanning is most essential especially where it is desired to secure uniform production of duplicate parts. Electricity can be depended upon to afford a ready, simple and dependable control and takes two distinct forms-hand and automatic control. The first consists of numerous switches connected with the heating elements so that the desired number of heaters to produce or hold a given temperature can be turned on or off. With the second method, a thermostat consisting of a capillary tube thermometer which actuates a contactor through a relay to throw off part or all of the heaters when the oven reaches the desired temperature and again throwing them in when the temperature falls has been The bulb or sensitive member of found satisfactory.

the thermometer is usually about 15 ft. long and is placed inside the ovens, an armored connection being run to the indicating portion of the thermometer on the outside of the oven. The actuating fluid is a liquid which vaporizes at a temperature slightly above that of the atmosphere and the instrument has two indicator hands which are set at the maximum and minimum temperatures desired.

#### Types of Electric Ovens

Oven design is an important feature in all japanning. The less the radiation and ventilation losses from the oven, the greater amount of heat available for actual work. The oven walls, roof and floor should be constructed of a high-grade heat insulating material, and it is also important that the material has little mass to keep its heat absorption as low as pos sible. Up-to-date practice shows that a 4 to 6 in. wall lined with diatomic earth or similar products seems to meet these requirements. As little metal as pos-sible should run from the inside to the outside of the oven as the thermal conductivity of wrought iron or mild steel is about 1400 times that of a good insulating material, and a 1/4-in. bolt will radiate nearly the same amount of heat to the outside air as a 7-in. square of good insulating material. Proper ventilation also requires attention. From both a baking and a safety point it has been found that just enough air must be brought into the oven to reduce the vapors given off by the japan to below a point where it becomes an explosive mixture, but not enough to cool down the oven and retard the baking. The best way to handle this problem is to base the amount of ventilating area upon the amount of japan to be baked, or for every gallon of japan baked within an oven at one time there should be 1200 cu. ft. of free air taken into the oven during the vaporizing period.

Japanning ovens in use to-day can be divided into three types: the box or kiln, the semi-continuous conveyor and the continuous conveyor. In the first the heaters are usually placed on the side walls or floor to give the proper distribution of heat. The semi-continuous conveyor oven is made as a rotary oven and also in a box type with a conveyor which is moved as the operator desires. The former is cylindrical in shape with a heat insulating partition through the center, thus enabling the operator to be loading onehalf of the oven while the other half is baking. oven is very convenient where many pieces of different sizes and shapes are to be japanned. The semi-continuous conveyor box type has doors placed at both ends. A conveyor, from which the work is hung, runs through the upper part and is of sufficient length to extend the same distance beyond each end of the oven as its length within. With this type one charge is baking in the oven while a second is being loaded. When the first japan coat is baked, the conveyor is started moving the baked pieces out of the discharging end of the oven and the newly dipped pieces are brought into the baking chamber the first lot has vacated. These ovens are usually built either double or triple, depending on whether two or three coat work is desired. This type of oven conserves the heat better than the ordinary box type. With a baking temperature of about 450 deg. Fahr. a new charge can be brought into the oven without the temperature dropping much below 300 deg. Fahr., while in the ordinary box type the temperature must necessarily drop to a point where the operator can enter the oven to remove the baked pieces.

The continuous conveyor type oven consists usually of a long inclosure through which the work is passed on a slow-moving conveying apparatus, and if desired all handling can be eliminated by installing apparatus for loading and unloading the conveyor automatically. The heating of this oven has been worked out carefully, in most cases the heaters being arranged within the different sections of the inclosure so that the incoming work is brought up to its final baking temperature by steps. Usually no heaters are installed in the first section, and when this is the case the hot baked work is brought out of the oven in such a way as to give up a good share of its stored-up heat to

<sup>\*</sup>From a paper presented before the Cleveland Engineering Society, April 3, 1917, by C. D. Carlson, industrial heat engineer Cleveland Electric Illuminating Company.

the cold incoming work. It is interesting to note that for the same amount of energy consumed as high as three times the amount of work has been gotten out of the conveyor oven as out of the box type.

#### Fire Hazard of the Process

While electrically heated ovens have been looked upon from the first as the solution of the prevention of fires and explosions which so often occur in japanning, two kinds of fires are possible. When pieces freshly dipped with japan are placed in an oven there is apt to be what is called a secondary drip when the heat is first applied. This waste japan will accumulate on the floor of the oven and bake, the deposit being increased with each successive charge until a thick, porous crust of baked japan has been formed, which, when heated from 500 to 600 deg. Fahr., in the presence of oxygen will ignite spontaneously. If this burning were confined to the oven floor it would be harmless, but if it reaches the freshly japanned work quite a disastrous fire might result. When the volatiles given off by the japan strike a surface with a temperature lower than their own they will condense and form a deposit on this surface, the flues of the oven naturally gathering most of the condensed volatile. This deposit may ignite spontaneously, back-firing into the oven, or the flues may become clogged so that proper ventilation is cut off and an explosive mixture left within the oven. From an electrical standpoint great care has been taken to prevent ignition, even where the precautionary measures have been disregarded, as the heating units are designed with a temperature not much over 100 deg. Fahr. in excess of the oven baking temperature. This temperature, except in unusual cases, will be below the flashing point of japans.

Electric japanning is a new industry, having practically grown up within the past three years. To date it comprises a connected load of approximately 50,000 kw. distributed over 75 manufacturing plants in nearly as many cities. Among its largest users are firms like the Willys-Overland Company,\* which alone has a connected load of about 20,000 kw. in heaters; the Ford Motor Company, which has adopted electric ovens for its different assembly plants over the country, and the Dodge Brothers Company, which is baking its cars almost entirely by electric heat. In Cleveland to-day there are 18 electric ovens, divided between the box and semi-continuous conveyor types, in operation, while as many more are in the development stage. At present plans are being worked out for several continuous conveyor electric ovens, and these will be in operation in Cleveland inside of a very few months.

#### Lake Superior Iron Ores

The Lake Superior Iron Ore Association, Rockefeller Building, Cleveland, W. L. Tinker, secretary, has just issued its booklet giving analyses of Lake Superior iron ores for the season of 1916. The analyses do not show much difference as to the chemical content of the ores in 1916 compared with 1915. An interesting feature is that the at one time much discussed Baraboo range is represented by one ore, Cahoon, for the first time since 1908. On the Cuyuna, a new range, 12 new ores are listed and none discontinued. On the Gogebic, there are three new ores, while four disappear, making a net loss of one. The Marquette has five new ores, with 15 discontinued, but this showing is not as unfavorable as it appears for the reason that all but three of the ores now left out were ores listed but never shipped and should have been dropped from the booklet several years ago. The Menominee has 11 new ores while four disappear. The great Mesaba range has 29 new ores, while 12 have disappeared. The Vermillion has added one and lost one. On the Canadian side the Michipicoten has one new and one discontinued, while Sudbury has lost one and added none. The new booklet has 326 ores, a net gain of 26 over last year.

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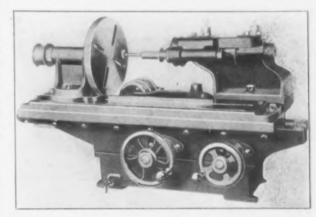
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## Wet Tool and Cutter Grinding Machine

A wet universal machine for grinding tools and cutters has been placed on the market by the Factory & Mill Supply Company, 137 Oliver Street, Boston. It is designed especially for grinding small tools, fixtures, gages, etc., and will also handle other work not exceeding 10 in. in diameter or 15 in. between centers. The machine can be furnished with or without a floor stand, although it was designed primarily for use on a bench.

The longitudinal and cross feeds provided are operated by handwheels with indicating dials, the former being 15 in. between centers while the cross feed, which has a micrometer adjustment graduated to within 0.0005 in., is 6 in. The table has a travel of 30 in. The grinding wheel spindle is 1 in. in diameter and runs in phosphor bronze bearings having means for taking up wear. If desired the ordinary type of disk wheel can be removed and an internal grinding attachment, such as is shown, substituted. The centers are % in. in diameter and are arranged for rapid adjustment. A special type of pump is employed to furnish water to the work that is being ground, the reservoir being located in the ma-



Small Tools, Fixtures, Gages, etc., and Work Not Exceeding 10 In. in Diameter and 15 In. in Length Are Handled by This Machine

chine base. This machine is claimed to be the only one on the market for doing light work that is equipped with a pump and reservoir. A faceplate 9 in. in diameter which is threaded for the hollow spindle of the headstock and is fitted for a No. 2 Morse 'aper is provided.

The machine is belt driven by a 1%-in. belt from two-speed countershaft, the wheel speed being 3000 r.p.m. The driving pulley is 3 in. in diameter and is designed to mount a wheel 8 in. in diameter with a %-in. face.

#### New Device for Molding Cast-Iron Pipe

A device whereby a sand mold for cast-iron pipe may be made rapidly, economically and effectively is claimed as furnished by a patent granted to James B. Davie, Brooklyn, N. Y. (U. S. 1,208,107). It is an apparatus by which the sand mold is formed, packed, smoothed and black-washed mechanically by means of a revolving pattern. The rotary and longitudinal movement of a pattern through the flask is claimed to form a compact sand mold. A pattern which is caused to pass through the flask with this revolving motion is said to pack the sand evenly and thoroughly to any desired thickness with a maximum of production and a minimum of labor, the same device being suitable for the further black-washing of the mold. The speed of production is claimed to greatly excel the present methods.

McLain's System, Inc., Milwaukee, Wis., has closed an order for a 2 to 3-ton McLain-Carter oil-fired furnace with the American Machine & Mfg. Company, Atlanta, Ga. The installation will be in operation Aug. 1 and is the sixth furnace installed in the past year. The furnace which was installed at the Lenoir City Car Works, Lenoir City, Tenn., and which first melted steel April 2, is now at capacity operation.

<sup>\*</sup> An illustrated description of the electric enameling ovens at this plant appeared in The Iron Age, Nov. 30, 1916.

## FURNACE CHARGING MACHINE

#### Equipment Planned for the Smaller Sizes of Open-Hearth Furnaces

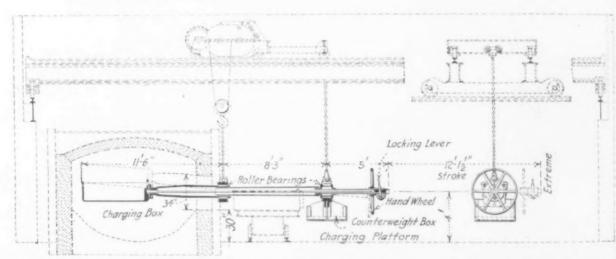
A new design of single-hoist charging machine for use in steel foundries equipped with open-hearth or electric furnaces has been developed by Edgar E. Brosius, Benedum-Trees Building, Pittsburgh. It is designed to eliminate the trouble experienced in getting labor where furnaces are charged by hand on account

35"

In operation the crane lowers the charging bar to engage the charging box, which is securely locked to the bar by the manipulation of the locking rod lever. The bar is then hoisted and run forward to place the box in the furnace, where it is dumped by turning the handwheel. The movement of the wheel is continued until the box is righted, when it is withdrawn from the furnace and placed on the charging platform. A backward motion of the locking bar lever releases the box which is replaced by another one, and the cycle repeated. Two men, it is pointed out, can handle the charging bar easily, as their only labor is to operate the lever for

locking the charging bar and box together and turning the handwheel to empty the box.

The length of the charging bar is changed to suit each particular installation, as it is desirable to carry the box within 1 ft. of the rear furnace wall to permit of a maximum charge. The distance between the supporting collars is determined by the amount of counterweighting required to balance the charging box and its load, the object being to keep the handwheel at the end of the bar as far away from the furnace as possible on account of the extreme heat.



This Single-Hoist Charging Machine for Small Open-Hearth or Electric Furnaces Can Be Employed Either as an Auxiliary to the Large Electric Charging Machines or Takes Their Place Entirely

of the heat and the heavy lifting in putting the charges into the furnace, and can be employed either as an auxiliary to or a substitute for electric charging machines. It is stated that only four men are required with this machine, the crane operator and one for handling the boxes in the stock yard, while only two are required on the charging platform to handle the machine.

The machine is operated from the hoist of an overhead traveling crane wh.ch, it is pointed out, gives all the motions of the electric charging machine, and in a number of cases cranes have already been installed over furnaces for handling stock, relining and making repairs so that no extensive alterations are required to install this machine. The front bearing is hung on the crane hook while the rear one is suspended at a fixed height above the floor by a chain attached to a small roller bearing trolley running on the bottom flanges of an I-beam attached to the crane trolley. The small trolley, it is emphasized, permits the charging bar to be swung on the ball bearing of the hook block as shown.

The machine is built of steel throughout and is carried on two cast-steel collars containing large roller bearings on which the charging bar rotates. This bar is rotated by a large-diameter cast-steel handwheel. The locking rod for fastening the charging box to the charging bar passes through the center of the machine and is operated by the lever adjacent to the handwheel. The counterweight box is of plate and angle construction and is designed to be filled with punchings to balance the charging box and its load.

In a number of plants this machine has been installed as reserve equipment to guard against interference with operations should the electric charging machine fail for any reason.

#### Swedish Machine Tool Industry

The statement is made in a British trade paper that there has been an enormous increase in the production of machine tools in Sweden since the war started, and this is taken as a sign that Swedish industry is preparing to compete more actively in the world's markets after the war, particularly in Russia. A number of works have amalgamated to form a company for the sale of machinery and machine tools. The Munktells Works forms part of the amalgamation. It is expected that the increased production abroad of highclass steel by improved chemical and electrical methods will diminish the demand for the Swedish product after the conclusion of peace, and another factor is the diminished use now being made in belligerent countries of those kinds of iron and steel which are nor-mally imported by Sweden. After the war there will be, therefore, an enhanced demand for these kinds of iron, and Sweden will have to pay high prices for In the meantime the Swedish production of them. such iron is being developed. At Oxelösund, for example, an iron works will shortly be completed at which it is hoped to produce yearly from 50,000 to 60,000 tons of pig iron, about half the Swedish require-

#### PRECISION GRINDING

### Consideration of the Grinding Machine as a Competitor of the Lathe

A paper on the general subject of precision grinding was read by H. H. Asbridge before the Manchester (Great Britain) Association of Engineers. The machine should not be regarded, he said, as a competitor of the lathe or other tool as a remover of metal, but rather as a means of removing metal in which finishing is included. The grinding machine will remove metal more quickly than the cutting tool, as shown by the lathe finishing tool tests of Dempster Smith, whose object was to determine the maximum area of steel shaft that could be finish-machined for a minimum wear of tool. The diameter of shaft was 8 in., traverse per revolution 1/20 in., depth of cut 0.003 in. The tests indicated that the best finishing speed was about 70 ft. per minute, or 71/4 min. to finish turn an 8-in. shaft 1 ft, long. The same work in a grinding machine comparable in size to the lathe on which the shaft was turned. the author said, would require 11/2 min. If the sizing operation to a 0.005 in. limit, were included, the total time would not exceed 4 min. per foot of shaft.

#### Speeds for Cylindrical Grinding

For cylindrical grinding, Mr. Asbridge said the best average surface speed of modern grinding wheels made of artificial abrasives is about 6000 ft. per minute for external cylindrical grinding, and the useful speed range is from 6500 ft. to 5500 ft. per minute; below this speed excessive wheel wear is liable and probable. Grinding machines should be arranged so that the effective life of the wheel falls within this range. The effective life of the wheel is that portion outside the minimum diameter which can be used owing to the limitations of the machine or the method of mounting. He emphasized the necessity of maintaining the speed of the wheel during the cutting operation, no matter what the speed may be. The drive should be sufficiently powerful to prevent slowing down during momentary heavy cutting.

heavy cutting.

The ideal traverse per revolution of the work is about two-thirds the width of the wheel for external grinding, but it should not, except for finishing, be less than half the width. The speed of the table travel becomes of great importance if a maximum production is to be assured. The main factor governing production on external cylindrical grinding machines is the combinations of wide wheels with fast table speeds. The machine which possesses these advantages is the most efficient tool. Work speed has only an indirect effect on the output. With a good wheel it makes little difference to the finish obtained, the author holds, whether the work surface speed be, say, 30 ft. or 60 ft. per minute, except that if the lower speed is persisted in, it limits the table travel, and so in turn limits the output.

#### Internal Grinding

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at to As regards internal grinding, the idea that the spindle should run at from 30,000 to 50,000 r.p.m. was entirely erroneous. The grinding wheel surface speed for internal grinding has little effect on production. It has been found that the effective speed range of a good grinding wheel is greater than in any other form of grinding, and ranges from about 1000 ft. to 4000 ft. per minute. Much of the most successful grinding is done at a surface speed of from 1500 ft. to 2500 ft. Such results have only been made possible by spindle construction of the utmost rigidity. Rigidity is of more importance than actual wheel speed. The later design of internal spindle is so constructed that the spindle bearings never enter the hole being ground. The wheel is carried on an adapter fitted into the main spindle, and held by a draw-bolt. If the work to be ground is of limited range, the adapter portion is formed integral with the main spindle.

with the main spindle.

For internal grinding wide wheels and a table traverse up to 9 ft. to 10 ft. per minute are advocated. For surface grinding the best wheel speed was about 4000 ft. per minute.

Grinding is probably the only cutting operation in machine work in which the output cannot be calculated with any approach to accuracy on the usual basis of cutting speed and feed. However, he maintained that grinding times for external cylindrical work could be based by means of the following formula: Diameter of work in inches  $\times$  length in feet  $\times$  constant = grinding time in minutes for the removal of 1/32 in. diameter and finishing to commercial limit.

Table of Constants for Determining Grinding Times

Diameter of Work	Size of Wheel	Constant
4-in. shaft and upward		
3-in. shaft and upward		
2-in. shaft and upward	26 in. by 3 in.	1.8
11/2-in. shaft and upward	26 in, by 3 in,	2.2
1-in. shaft and upward	26 in, by 3 in.	3
3-in. shaft and upward	14 in, by 2 in.	2.2
2-in. shaft and upward	14 in. by 2 in.	3
134-in. shaft and upward		3.7
1-in. shaft and upward	14 in, by 2 in.	5 3
3-in. shaft and upward	12 in, by 1 in.	
2-in. shaft and upward	12 in. by 1 in.	3.8
11/2-in, shaft and upward	12 in. by 1 in.	4.5
1-in. shaft and upward	12 in. by 1 in.	6.3

For the removal of 1/64 in. in diameter it was necessary to allow two-thirds of the time obtained. For work below 1 in. diameter the grinding time tended to increase, depending entirely on the rigidity of support afforded, while extra time should be allowed to special limits, such as might be required for drive fits, etc., or for special finished surfaces, such as were necessary for spindles and gages.

### To Investigate Welding Patents

What is known as the Welding Patents Investigating Committee is circularizing users of electric spot welding machinery to develop what is apparently a defense organization to resist the payment of royalties to the Thomson Spot Welder Company, Lynn, Mass., holder of the Harmatta patent. The committee grew out of a meeting held at Canton, Ohio, Feb. 21, at which there were 30 representatives of some hundred concerns "using approximately 900 to 2000 welding machines." At this writing the committee has issued a list of 224 contributors to the investigation on the basis of \$10 per spot welding machine.

of \$10 per spot welding machine.

H. C. Milligan, president and treasurer Republic Stamping & Enameling Company, Canton, is chairman of the committee, which has established headquarters at 700 Renkert Building, Canton. Other members of the committee are the following: S. S. Kurtz, general manager McCaskey Register Company, Alliance, Ohio; J. M. Sanders, president and treasurer United States Stamping Company, Moundsville, W. Va.; T. H. Kane, works manager Trussed Concrete Steel Company, Youngstown, Ohio; Ralph R. Lounsbury, counsel and commissioner National Association of Steel Furniture Manufacturers, Chicago; R. B. Dangeleisen, Globe Machine & Stamping Company, Cleveland, also representing Pressed Metal Association; C. R. Jamison, engineer of methods Berger Company, Canton; A. Raymond Ackerman, recording secretary.

#### Lochiel Furnace Will Make Ferromanganese

The Lochiel furnace, Harrisburg, Pa., formerly one of the properties of the Pennsylvania Steel Company, recently purchased by Edward E. Marshall, president of the American Manganese Mfg. Company, Philadelphia, from the Bethlehem Steel Company, will make ferromanganese. The stack, which was last active in 1913, is 65 x 13½ ft., was built in 1872 and remodeled in 1886. It has an annual capacity of 35,000 tons of pig iron.

The United Construction Company, Title Guaranty Building, St. Louis, has been awarded contract for the construction of a power house for the Missouri Metals Corporation, Mine LaMotte, Mo. It will be approximately 60 x 150 ft., of reinforced concrete construction. Diesel engines will be installed.

The Superior Steel Company, Carnegie, Pa., has changed its name to the Superior Steel Corporation.

## Better Progress at Washington Is Now Likely

Congress, However, Will Not Grant Unlimited Powers to Commissions—Why Business Hesitates—Many New Vessels Ordered

WASHINGTON, May 22, 1917 .- A perceptible slowing down in Congressional legislation relating to war plans has drawn sharp criticism from the President and other Administration officials during the past week. Congressional leaders and especially the more experienced members of the Senate have resented these strictures, and in the public sessions of Congress have retorted with caustic comment upon the failure of the executive departments to make progress in matters as to which Congress has already clothed them with full authority. Incidentally the Council of National Defense and the Advisory Commission have been sharply assailed on the floor of the Senate not only for seeking to force through legislation without due consideration, but for assuming to exercise an authority far beyond the scope of existing law. While these incidents are to be regretted in so far as they disclose inefficiency and lack of team work, they have served to clear up the stagnant atmosphere and more rapid progress both in Congress and in the departments may be looked for hereafter.

#### Shipping Board's Far-Reaching Powers

The Senate has been the storm center as the result of the strenuous efforts of Administration officials to rush through the huge war budget bill with the Shipping Board rider appropriating \$405,000,000 for the construction of an emergency fleet of cargo vessels, and clothing the President with extraordinary powers to commandeer shipyards and workshops for this purpose. While the aims of the Shipping Board are most laudable, and are generally approved, its program has been framed with little regard to the business necessities of the country or, in fact, to other features of the broad project for national defense. Experienced Congressional leaders, realizing that the entire program for carrying on the war must be constantly kept in view, have refused to be stampeded into passing the Shipping Board's rider without debate, and have insisted not only upon examining its provisions carefully, but in amending them for the protection of private interests and especially to prevent heavy individual losses as the result of the autocratic exercise of power on the part of executive officials temporarily clothed with an authority which Congress has never heretofore bestowed even upon the President of the United States.

#### No Unlimited Power to Commissions

The tone of the criticism in the Senate of the attitude of many Administration officials who are demanding the enactment of comprehensive far-reaching measures "while you wait," is reflected in an impressive statement made on the floor by Senator Lodge of Massachusetts, one of the most experienced members of the Senate, in giving notice that the Shipping Board rider would be examined in detail and carefully considered in connection with the entire national defense program. Senator Lodge said:

There seems to be an idea abroad that the sole business of Congress is to take a bill which is sent down from some bureau, which has been drafted perhaps by some excellent gentleman who emerged upon the public gaze within the last few months, and that our business is to sit here, have his bill read, and then pass it, with a few commendatory and grateful observations, in the course of the morning hour. I do not know how far what I am saying may reach, but it is just as well, Mr. President, that it should be under-

stood by the press, at least, that this is not the conception of the duties of Congress which I and other Senators and Representatives who feel their responsibility entertain. We are not here to swallow all legislation presented to us from the department, and not even look at it. We should be recreant to the people who have elected us if we did not use our utmost efforts to secure the best legislation possible, and as rapidly as we can in this great crisis of the country's fate,

Mr. President, under the pressure of war we are having demands made upon us for powers to be invested nominally in the President, but really in Cabinet officers, the heads of bureaus, and in commissions—creatures of the moment—which equal the powers exercised by the great autocracy of Germany. I do not think it is going too far to say that such grants of power ought to be very carefully considered.

We shall not expedite the war by destroying the legislative powers of this Government. We are in danger under this pressure for great haste of losing the confidence of the country, not only confidence in Congress, but in both the Administration and Congress

The most important thing for carrying on the war is to keep the industries of the country in the field and farm and factory in the highest state of productivity possible. Such an atmosphere of uncertainty has been created by this demand for powers to interfere with every form of human activity, to be placed in the hands of men of whom the country knows absolutely nothing, that business is absolutely hesitating, is stopping, is languishing. Business and industry can sustain almost anything except suspense and threats hanging over their heads. But at this moment, as I have said, they are languishing.

## Confidence Is Needed

You must have that spirit of confidence, you must make your farmers, your workingmen and your business men understand that there is a reasonable certainty in the future that they are not going to be interfered with needlessly and recklessly. If you do not do it, if you allow the present condition of fear to continue, you will find your loans in danger and your sources of taxation drying up.

Therefore, Mr. President, it is more than ever important that these questions should be discussed here; that there should be reasonable and proper discussion. There has not been one instant of needless delay since April 4 to my knowledge. The debate has been all genuine debate. We all want to pass the bills as rapidly as possible, but Congress is not going to be stampeded into passing bills of vast moment, not merely from the money point of view, but in the constitutional point of view, by a demand for powers, because some body who got control of a bureau or of a commission a little while ago thinks that unless he has unlimited power the country is in danger. The gentlemen who feel in that way have not yet adjusted their relation to the universe.

The restiveness of Senators under the criticisms of administration officials for delay in passing the pending measures has also been voiced by Senator Poindexter of Washington, who, in a spirited speech, declared that although the most comprehensive powers have been conferred upon the executive branch of the Government, very little substantial progress has been made in improving the country's defense.

## Shipping Owners Better Protected

The careful examination which the Senate has insisted upon giving to the extraordinary provisions of the Shipping Board's bill has resulted in an important

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change in the sections authorizing the Government to commandeer private property, including vessels of all kinds, whether already built or in course of construc-President should fix the price to be paid the owners for such commandeered property, and that in the event of the unwillingness of the owner to accept the figure thus determined he should be paid one-half the amount and permitted to bring suit in the Court of Claims for the remainder. Several veteran Senators familiar with the history of this type of litigation declared that the provision afforded wholly inadequate protection to owners. Proceedings in the Court of Claims are notoriously slow and costly, and in the event of success on the part of a claimant he must then wait until Congress, at its leisure, provides a special appropriation to pay the award of the court. It has frequently happened that uncontested claims have thus remained unpaid for many years, the amounts finally secured by the claimants scarcely paying the costs of the court proceedings and the expenses incident to securing the appropriation. The managers of the pending bill frankly acknowledged the force of these observations, and finally consented to increase the amount to be paid in cases of disagreement from 50 to 75 per cent of the President's tender, but declined to modify the provision requiring owners of commandeered property to go into court to recover any balance claimed to be due.

#### Limitation on Purchases Voted Down

A vigorous effort was made by Senator Smoot of Utah to limit to \$250,000,000 the amount to be expended by the Shipping Board for the purchase of vessels now in course of construction in American yards for foreign account. Pointing to the fact that over one million tons of such ships are now being built in the United States at contract prices ranging from \$175 to \$200 per ton, Senator Smoot said that it was gross extravagance on the part of the United States to acquire these vessels at such prices. Upon the conclusion of the war these ships would have to be put into the merchant marine in competition with foreign owned vessels costing from \$45 to \$50 per ton, and it would be necessary to charge off more than three-fourths of their first cost or operate them at a heavy loss. He thought the Government should not spend a larger sum for the purchase of ships than that suggested in his amendment, and he intimated that if no such check upon the Shipping Board were provided, speculators would speedily option the producing capacity of all the yards in the country, and then sell out to the Shipping Board at large profits. After considerable discussion, however, Senator Smoot's amendment was rejected.

In addition to adding \$505,000,000 to the war budget bill for the Shipping Board, and authorizing contracts to be appropriated for hereafter aggregating \$250,-000,000, the Senate increased the budget measure \$237,-000,000 for army and navy items, and deducted \$79,536,000 from House items of less military importance. Included among the increases are \$35,000,000 for the purchase and manufacture of mountain, field and siege cannon, \$26,350,300 for automatic machine rifles, \$1,350,000 for manufacture of small arms, \$970,000 for ammunition, and \$2,000,000 for naval ordnance and ordnance stores. The largest item of increase, \$61,963,745, is for the transportation of the army and its supplies.

#### Tugs May Be Requisitioned

An amendment has been added to the budget bill at the instance of the Secretary of the Navy, giving the President power to requisition all American ships, including fuel vessels, tankers and tugs, as naval auxiliaries. Such vessels do not come within the provisions of the Shipping Board's rider, and cannot be commandeered under any other legislation heretofore en-

acted or now pending. Senators Weeks of Massachusetts and Brandegee of Connecticut protested against the inclusion of tugs in this amendment on the ground that it was the avowed purpose of the Navy Department to take over a number of such vessels now being operated in New England waters for the towing of coal barges. The railroads of New England, Senator Weeks said, are able to distribute but 60 per cent of the coal required by that section, the remainder being handled by tug and barge. The commandeering of these tugs, he said, would reduce the coal supply not only of the general manufacturing corporations of New England, but of a very large number engaged upon important Government contracts for war material. An amendment offered by Senator Weeks, excluding tugs from the operation of the new provision, received considerable support, but was finally rejected upon an appeal to the Senate by Senator Martin, manager of the budget bill, who declared that the President would not cripple the manufacturing interests of New England by any heedless action.

#### Contracts for 17 Steel and 36 Wooden Ships

It is unofficially announced that the project of the Shipping Board for the construction of standardized ships, both wooden and steel, is being developed at as rapid a rate as could be expected under the conditions existing in the principal shipyards. The board, for the reasons heretofore stated, is unwilling to make definite announcement of the placing of contracts, but it is understood that a large number of tentative orders have been given to be confirmed after the war budget bill is signed by the President. In addition to contracts heretofore announced it is understood that orders have been placed with New York shipyards for 17 steel ships of 8800 tons each, and for 36 wooden ships of 3200 tons each. It is predicted that before July 1 contracts will be let for 300 large steel ships, and for 600 smaller wooden vessels. The immediate aim of the board is to let contracts for 1000 ships as soon as possible, to be followed later on with additional awards if the necessities of the Government and the shipbuilding facilities of the country warrant.

#### To Build 24 Mine Sweepers

The Secretary of the Navy held a conference yesterday with representatives of a dozen shipbuilding concerns regarding the practicability of securing the construction and early delivery of 24 "combined sea tugs and mine sweepers" of about 1000 tons each. The companies represented at the meeting were the Standard Shipbuilding Company, Staten Island Shipbuilding Company, Todd Shipbuilding Company, and American Bureau of Shipping, New York; Harlan & Hollingsworth Corporation, and Pusey & Jones, Wilmington, Del.; Sun Shipbuilding Company and Chester Shipbuilding Company, Chester, Pa.; Baltimore Dry Docks & Shipbuilding Company, Baltimore, Md.; Bethlehem Steel Company (Maryland plant), Sparrows Point, Md.; and Pennsylvania Shipbuilding Company, Gloucester, N. J. As the result of the conference, it is believed contracts will be speedily let for the 24 vessels referred to.

## Cost Plus Basis for Vessels

The Naval Compensation Board, which has been in session here several weeks for the purpose of working out a project for determining the method of accounting to be pursued with reference to the construction of battle cruisers on a cost plus profit basis has reached an agreement with all the shipbuilders interested in these contracts. The negotiations between the board and the shipbuilders have developed the fact that there is a marked difference in the methods pursued at the navy yards and in the private shipbuilding concerns in determining cost, and that the private yards are obliged

to charge against Government jobs numerous items which the Navy Department treats as departmental expense not to be included in the cost of construction. The private shipbuilders, however, have been able to convince the Department that some of these charges should be taken into account in all the estimates the Department is called upon to make in competition with private yards. The result of the conferences held by the board has been to give the Department a much clearer understanding of commercial accounting methods, and it is believed will insure fairer treatment of concerns that may hereafter bid on warship contracts.

### Wooden Ship Program Goes Right On

Widely circulated reports, recently repeated on the floor of the Senate, concerning differences between members of the United States Shipping Board and General Goethals, manager of the Emergency Fleet Corporation, including a statement that the board has abandoned its wooden shipbuilding program at the instance of General Goethals, has drawn a formal declaration from Chairman Denman of the board to the effect that contracts have already been let for 26 wooden ships, and that many more will be let in the near future. Mr. Denman says:

The Shipping Board has never wanted to build wooden ships, but has been driven to it by necessity. It views the expenditure of Government funds for this purpose with the same regret that it would have felt toward the expenditure of \$50,000,000 given to it by Congress at the time of its organization for the building of battleships to carry merchandise. The wooden vessel has an economic value that is not entirely negligible, but were it not for the war it is not conceivable that we would have built one of them.

General Goethals did not ask it, but we assured him that his managerial powers should be absolute, and that while he could call upon the board for any assistance he might need, that the board would not attempt to interfere with any of his policies. We have endeavored to the best of our ability to carry out our share of the bargain, and we know, as every one else knows, that the General at this difficult task has given the same cheerful energy and devotion of genius to the nation that he did on the canal.

The contract for the boilers for the first ships of the new emergency fleet has been awarded to the Heine Safety Boiler Company. It covers 32 standard marine boilers, four for each of the eight ships being built by the Los Angeles Shipbuilding & Dry Dock Company under the supervision of General Goethals. Each boiler contains 2900 sq. ft. of heating surface, and is designed for a working pressure of 200 lb. Oil will be used for fuel.

W. L. C.

#### Four Killed at Haselton

Youngstown, May 21.—Four men were killed and a dozen others injured when a turbogenerator installed only about six weeks, at the Haselton Bessemer furnaces and open-hearth plant of the Republic Iron & Steel Co., "ran away" Sunday afternoon at 12.30 o'clock, control being lost of the machinery as the governors stuck and the strain broke a massive shafting or main driving rod, that sent pieces of steel in many different directions, causing employees to run in all directions. The open-hearth plant was closed down 24 hours while the power from auxiliary engines was adjusted to permit the resumption of operations.

The Foote Mineral Company, Philadelphia, is issuing each month a booklet, "Mineral Foote-Notes," which contains prices and market news on ores, alloys and other mineral products. The May issue contains a short special article on molybdenum by O. J. Stewart, assistant professor of chemistry, New Hampshire College, Durham, N. H. Most of the rarer minerals and metals are covered in the market quotations.

#### Notable Three Months in Steel Exports

German unrestricted submarine warfare has not been as effective as feared, so far as shipments of iron and steel from the United States are concerned. Taking the first three months of this year, two of which were dominated by the submarine, and comparing them with the last three months of 1916 when the outward movement from this country was at its height, the total iron and steel exports for the former period were only 162,249 gross tons less than in the last quarter of 1916. The monthly average in the first quarter of this year were 527,888 tons while for the preceding quarter they were 581,971 tons. It is also rather surprising that the monthly exports in January, February and March this year-527,888 tons-were considerably in excess of the average for the year 1916, which was 508,508 tons per month-the greatest steel export year in the history of the country.

It is noteworthy in this connection that the exports of pig iron, billets, ingots and blooms, steel rails, steel bars, barb wire, tin and terne plate and steel plates were only about 55,000 tons less in the first three months of this year than in the last quarter of 1916. The principal falling off was in pig iron, about 25 per cent, but in billets, ingots and blooms there was an increase of over 10 per cent. In fact, March established a month's record in 193,469 tons of billets, ingots and blooms sent out. Large increases were also recorded in the first quarter of this year in exports of steel rails, tin plate and steel plates over those of the preceding quarter.

#### Government Work in Rhode Island

By instructions of the Attorney-General at Washington, a list has been issued of the plants in Rhode Island engaged on Government contracts. This list has been published to establish the districts from which aliens of enemy countries are excluded unless they have a proper permit. In the list are found these metalworking companies:

Providence—General Electric Company, Allen Fire Department Supply Company, D. & W. Fuse Company, Providence Engineering Works, Almy Water Tube Boiler Company, Brown & Sharpe Mfg. Company, New England Butt Company, Textile Finishing Machinery Company, American & British Mfg. Company, General Fire Extinguisher Company. Crompton & Knowles Loom Works, Rhode Island Tool Company, Providence Steel & Iron Company, James T. Tower Iron Works, Nicholson File Company, Fuller Iron Works, Gorham Mfg. Company, American Locomotive Works.

Pawtucket—Collyer Insulated Wire Company, Fales & Jenks Machine Company, Narragansett Machine Company. Potter & Johnston Machine Company, J. M. Carpenter Tap & Die Company, Champion, Horse Shoe Company.

Die Company, Champion Horse Shoe Company.

Woonsocket—Taft-Pierce Mfg. Company, Woonsocket Machine & Press Company.

Cranston—General Fire Extinguisher Company, Standard Machinery Company, Universal Winding Company. East Providence—Washburn Wire Company.

East Providence—Washburn Wire Company.
Warwick—Rhode Island Malleable Iron Works.
Bristol—Herreshoff Mfg. Company.
Valley Falls—Perkins Horse Shoe Company.
Central Falls—Hemphill Mfg. Company.

## French Iron and Steel Imports in 1916

French iron-ore imports in 1916 are given as 627, 603 metric tons, as against only 271,159 tons in 1915, and 1,400,000 tons in normal years. Spain furnished 457,273 tons of the 1916 imports and 86,347 tons came from Italy. Pig iron and steel imports are given as follows, in metric tons:

	1916	1915	1913
Pig iron	621,978	166.397	32,669
Blooms, billets and bars1	,659,621	OUT OF T	19,379
Wire rods		63,051	13.760
Plates and sheets	80.619	68.340	19,460
Wire	93,598	46,266	6.088
Rails	142,809	40,658	1,792

Great Britain furnished 551,560 tons of the pigiron imports in 1916. The very large expansion in the imports of blooms, billets and bars was due to the manufacture of shells.

## FOUNDRYMEN'S CONVENTION

### New England Members Preparing for a Notable Gathering

New England foundrymen are making extensive preparations for the meetings of the American Foundrymen's Association and the American Institute of Metals at Boston in the week of Sept. 24. At the same time will be held the yearly exhibition of foundry equipment and supplies, machine tools and accessories, in Mechanics Building, which affords 80,000 sq. ft. of floor space. Reservations for exhibits already have been made by 80 manufacturers and last year's total of 150 at Cleveland promises to be greatly exceeded. A prominent feature will be the extensive display of machine tools. The various equipment exhibits will demonstrate how operations can be speeded up to meet the demands of the Government; in addition, engineers will be in attendance who will explain the intricacies of munitions manufacture.

The program for the technical sessions of the American Foundrymen's Association is unusually complete and provides for separate sessions for the discussion of gray iron, steel and malleable iron topics. Three symposiums have been scheduled—"Military Stores," "After-Treatment of Castings to Improve Their Physical Characteristics," and "Refractories." The opening meeting on Monday afternoon, Sept. 24, will be a joint session of the American Foundrymen's Association and the American Institute of Metals. Throughout the remainder of the week, ending with Friday, Sept. 28, only morning sessions will be held, the same plan being followed which proved so satisfactory at Cleveland last year. It is probable that simultaneous sessions of the malleable and gray iron and steel sections will be held Wednesday, Thursday and Friday. The exhibition will be formally opened Tuesday morning, Sept. 25, and will close Friday evening.

Headquarters for the American Foundrymen's Association will be at the Copley-Plaza Hotel, although the meetings will be held in the Mechanics Building. The American Institute of Metals will have its headquarters at the Hotel Somerset, and its meetings will be held at this hotel or in the exhibition building.

The foundrymen of New England have completed a strong organization to provide for the reception and entertainment of the visitors. The program includes a boat trip around Boston harbor, theater party, a visit to one of the league parks to witness a professional ball game, ladies' luncheon and plant visitation. The complete list of committees appointed by the foundrymen is as follows:

Executive Committee.—W. J. Lavelle, chairman, New England Coal & Coke Company, Everett, Mass.; J. O. Henshaw, 79 Milk St., Boston; C. A. Reed, Reed, Fears & Miller, Boston; R. D. Walker, Walker & Pratt Mfg. Company, Boston; W. E. Freeland, The Iron Age, Worcester; A. R. Plant, Blackstone National Bank, Providence, R. I.; W. A. Viall, Brown & Sharpe Mfg. Company, Providence, R. I.; Fred F. Stockwell, Barbour-Stockwell Company, Cambridge, Mass.; A. R. Root, Jr., Hunt-Spiller Mfg. Corporation, Boston; T. R. Scott, Brown & Sharpe Mfg. Company, Providence, R. I.

Reception Committee.—E. A. Tutein, chairman, Thomas Iron Commany, Boston; H. Paul Buckingham, Arcade Malleable Iron Company, Worcester; F. F. Winlock, Barbour-Stockwell Company, Cambridge, Mass.; George H. Gibby, Gibby Foundry Company, Boston; W. Scott Thomas, J. W. Paxson Company, Providence, R. I.; F. B. Farnsworth, McLaron Foundry Company, New Haven, Conn.; George A. Ray, Taylor & Fenn Company, Hartford, Conn.; H. W. Woodworth, American Tool & Machine Company, Boston; Charles Van Stone, Lumsden & Van Stone Company, Boston; D. D. Bartlett, Builders Foundry Company, Providence, R. I.; F. W. Stickle, Capitol Foundry Company, Hartford, Conn.; Robert C. Newcomb, Deane Steam Pump Works, Holyoke, Mass.

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Stone, Lumsden & Van Stone Company, Boston; D. D. Bartlett, Builders Foundry Company, Providence, R. I.; F. W. Stickle, Capitol Foundry Company, Hartford, Conn.; Robert C. Newcomb, Deane Steam Pump Works, Holyoke, Mass.

Finance Committee.—W. A. Viall, chairman, Brown & Sharpe Mrg. Company, Providence, R. I.; H. A. Carpenter, General Fire Extinguisher Company, Providence, R. I.; W. J. Breen, Wm. J. Breen Company, Boston; A. N. Abbe, American Hardware Corporation, New Britain, Conn.; A. R. Plant, Blackstone National Bank, Providence, R. I.; A. J. Miller, Whitehead Bros. Company, Providence, R. I.; W. C. Fish, General Electric Company, Lynn, Mass.; L. G. Kibbe, Turner & Seymour Company, Torrington, Conn.

Ladies' Entertainment Committee.—R. D. Walker, chairman, Walker & Pratt Mfg. Company, Boston.; L. S. Brown, Springfield Facing Company, Springfield, Mass.; Charles L. Newcomb, Deane Steam Pump Works, Holyoke, Mass.; Robert C. Bird, Broadway Iron Foundry, Cambridge, Mass.; Carl S. Dixson, General Electric Company, Pittsfield, Mass.; W. H. Coffin, Springfield Facing Company, Springfield, Mass.; W. H. Lanigan, Davis Foundry Company, Lawrence, Mass.; W. M. Saunders, Saunders & Franklin, Providence, R. I.

Entertainment Committee.—C. A. Reed, chairman, Reed. Fears & Miller, Boston; W. T. Bennett, secretary, Griffin Wheel Company, Chelsea, Mass.; S. E. French, Athol Machine Works, Athol, Mass.; T. Officer, Sullivan Machinery Company, Claremont, N. H.; A. F. Corbin, Union Mfg. Company, New Britain, Conn.; H. A. Nealley, Jos. Dixon Crucible Company, Boston; G. P. Aborn, Blake & Knowles Steam Pump Works. Cambridge, Mass.; C. A. Olson, Walworth Mfg. Company, Boston; B. S. Leslie, United Shoe Machinery Company, Beverly, Mass.; T. R. Scott, Brown & Sharpe Mfg. Company, Providence, R. I.; Charles V. S. Paul, R. Estabrook's Sons, Boston; Charles L. Nutter, Old Colony Foundry, Bridgewater, Mass.; C. E. Hildreth, Whitcomb-Blaisdell Machine Tool Company, Worcester, Mass.; E. B. Freeman, B. F. Sturtevant Company, Hyde Park, Mass.; D. F. Eagan, Hotel Seymour, Lynn, Mass.; D. F. Curtin, Waltham Foundry Company, Waltham, Mass.; A. L. Haasis, Jos. Dixon Crucible Company, Jersey City, N. J.

Golf Committee.—J. O. Henshaw, chairman, Boston; A. E. Blazo, Rogers, Brown & Co., Boston; C. A. Wyatt, Debevoise-Anderson Company, Boston; Thomas F. Stokes, Alley & Page Company, Boston.

Press Committee.—W. E. Freeland, chairman, The Iron Age, Worcester, Mass.; A. W. Howland, the Foundry, 90 West Street Building, New York; A. O. Backert, Cleveland.

## Hospital Work at Tata Steel Works, India

India was engaged in welfare work some time before similar activities were fostered by our own manufacturers, according to B. R. Shover, consulting engineer, Pittsburgh, and lately identified with the Tata Iron & Steel Company in India. At Pittsburgh, on Feb. 17, at a meeting of the Association of Iron & Steel Electrical Engineers, he said that the Tata Company has long been maintaining a hospital. It now has a staff of 30 doctors, as well as internes, nurses, etc., and treats free of charge not only all accident and sickness cases of employees and their families, but anyone brought in from the surrounding country for a radius of 25 miles. In 1914 there was a total of 117,940 cases treated, nearly 50 per cent of which had no connection whatever with the steel works. The company maintains doctors and dispensaries at its collieries, quarries and ore mines.

"Methods for the Commercial Sampling and Analysis of Coal, Coke and By-Products" is the title of the latest pamphlet issued by the United States Steel Corporation. It is another in a series covering the standardization of the methods employed in the sampling and analysis of all materials encountered in the various lines of manufacture engaged in by the Corporation. It is especially timely and important in view of the progress made lately in the by-product industry in this country. Crude tar and benzol products are thoroughly covered as well as ammonia. A special feature is a discussion of the progressive dry distillation method. Methods for the determination of the calorific value of fuels are also included. The price of the pamphlet is \$1.50, and it can be obtained from J. M. Camp, chairman chemists' committee, Carnegie Building, Pittsburgh. Other Steel Corporation pamphlets that can also be obtained from the same source are: "The Sampling and Analysis of Gases," "Sampling and Analysis of Iron Ores," "Sampling and Analysis of Plain Steels" and "The Sampling and Analysis of Plain Steels," all \$1 each.

Duquesne Electric & Mfg. Company is the new name recently adopted by the Service Supply & Equipment Company, Bessemer Building, Pittsburgh, and under which it will trade in new and second-hand electrical equipment and do electrical repair work. The company has opened a large repair shop at East Liberty, Pa., with sales offices in the Bessemer Building, Pittsburgh, under the same management.

## ALL-INGOT TEST FOR RAILS

### Results with the New Method, Which Has Also Been Applied to Munition Steel

THE logical development of the soundness test of steel rails is a test of every ingot, but the practical difficulties in the way of doing this have so far prevented the adoption of the all-ingot test in this country, says George F. Hand, assistant engineer New York, New Haven & Hartford Railroad, in an article in the Railway Age Gazette, April 27, 1917. In this connection it is interesting to note that in carrying out some of the munition contracts in this country a fracture test is being made on every ingot and a good deal of this steel has been rolled in rail mills. It has been suggested that this may pave the way for some similar method in the case of rails.

In present open-hearth mill practice the heats of steel are quite large, from 20 to 35 ingots being poured from a single heat, and rejections based on the examination of but three of these ingots operate more as a penalty to improve the average of the rolling than as a means of weeding out the unsound rails. If none of the three test pieces show interior defects, all the rails in the heat are accepted, defects in rails from the other 17 to 32 ingots remaining undiscovered.

The Algoma Steel Corporation, Sault Ste. Marie, Canada, is the pioneer in applying the all-ingot test commercially, and R. W. Hunt's paper, read at the 1916 convention of the American Railway Engineering Association (abstracted in The Iron Age, March 23, 1916) demonstrated the very considerable saving to the mill in rejections and the real protection secured by the purchaser.

The mills of this country have uniformly objected to this specification because of the reduced output which is expected to result from the large number of tests to be made and difficulties in locating rails to be discarded for retest, says Mr. Hand. To obviate these difficulties the following method was suggested by the operating head of one of the rail mills, and applied experimentally to two heats of 107-lb. section rail.

The method of test is as follows: Test pieces are cut from the top rails of the second, middle and last ingots of the heat and are subjected to the usual drop test. The top rails from all other ingots in the heat are lightly cropped and then nicked at the base by the hot saw about one foot from the top end, care being taken not to cut into the head of the rail; the rails are then sawed to 35-ft. lengths and run onto the hot bed selected for the segregation of the A rails. All of these A rails are fed to the same straightening press where they are broken at the nick and the fracture examined by the inspector. Rails showing interior defects are rejected; those with clear fractures are straightened and cold sawed to 33-ft. lengths. In this way the test piece remains attached to its rail until the rail is accepted or rejected and all the difficulties of identification discourses.

identification disappear.

This method of test worked out very satisfactorily and was considered entirely practicable by the mill. Nicking the rail with the hot saw was done quickly and efficiently after the first few cuts and did not hold up the mill. The allowance of two feet additional to the usual length of the A rail was found to be sufficient to make the break at the straightening press and prevent "hooked end" rails. A cold saw should be set up near the straightening press to avoid unnecessary handling of the rail. This is the only change required in the ordinary mill equipment. The additional expense to the mill consists of a small increase in the piece rate to the cold straightener making the breaks, and a charge for the cold saw cuts. This increase is amply covered by the large decrease in rejections. The saving in rejected rail is best shown by Mr. Hunt's report of the Algoma rolling.

This method does not contemplate carrying the test for interior defects further than the A rail of each ingot. It is not contended that a retest on the B and C rails is not desirable, but the proposed method is submitted as a practicable means of eliminating unsound

A rails, the defects in the lower rails being fewer in number and of less importance. After referring to the Hunt report on the all-ingot test, this shows that of the A rails rejected for pipe, 44 per cent would have been accepted under the A. R. E. A. specifications; also, of the ingots with pipe in the A rails, only 3.3 per cent showed pipe in the B rails.

The detail results obtained on the two heats are shown below:

F	leat X-	——Heat Y——		
Ingot	Fracture	Ingot	Fracture	
1 2 3 4 5 6 7 8 9	O. K. O. K. O. K. Pipe O. K. O. K. O. K.	2*3	Pipe O. K. 2½-in. pipe. Rail broken back 2 ft. at a time; 1 in. pipe 7 ft. from first fracture; 2-in. pipe at 9 ft. Fracture clear at 2	
8 10 11 12 13 14 15 16 17 18 19	Pipe O. K. O. K. O. K. Pipe O. K. O. K. O. K. O. K. O. K.	4 5 6 7 8 9 10 11 12 13 14 15 16	ft. from B end of rail. O. K. O. K. Pipe O. K.	
		17 18 19•	O. K. O. K. 3½-in, pipe. 2½-in, pipe 2 ft. back and 1-in, pipe 4	

The starred ingots are those whose test pieces received the usual drop test. In heat X all three drop test pieces showed clear fractures, and all the rails in the heat would be accepted under the A. R. E. A. specifications, although three of the A rails were piped. In heat Y one of the drop test pieces showed pipe, and under the A. R. E. A. specifications all of the 19 top rails would be rejected, although 15 of these were sound.

The visual test for segregation, as made by Mr. Hunt, was not applied in the experimental run described, but can be if desired, although the results are far from trustworthy.

## Production of Synthetic Gasoline

That the market value of synthetic gasoline produced by cracking in the United States in 1917 will be sufficient to supply the Navy with 10 superdreadnaughts, is pointed out by Walter F. Rittman in a paper read at the Kansas City meeting of the American Chemical Society in April. In other words, one-fifth of the 3,000,000,000 gal. to be produced will be made by cracking. By July 1, 1917, the author claims, there will be in operation in the United States 4,000,000 automobiles. In 1917 approximately 600,000,000 gal. of cracked gasoline will be made in this country, continues Mr. Rittman. "It is estimated by competent authorities that the production of cracked gasoline in 1918 will be 1,000,000,000 gal. and that by 1920 more gasoline will be produced by cracking than by all other methods. Many people have been disappointed because cracking processes have not reduced the price of gasoline materially, but they have failed to consider their tremendous benefit in keeping the price of gasoline from going 10c. a gallon higher. Seven thousand automobiles a day require a cumulative supply of motor fuels. Our crude oil production is not increasing. Kerosene carburetors as yet are not a factor. The entire load is falling on its shoulders, and cracked gasoline promises to make light of its load."

At Noblesville, Ind., May 9, Judge Kent gave a ruling in the case of the Union Sanitary Mfg. Company against 80 iron molders who have been on strike since January, and whom the company sought to enjoin from endeavoring to prevent new men from taking their places. The court held that these strikers were within their rights and dissolved the temporary restraining order issued by Judge Cloe early in the spring. Judge Kent said he did not believe any of the defendants had violated the law. The court also taxed the costs, amounting to a large sum of money, against the company.

## SCRAP DEALERS ORGANIZE

#### Form a New Board and Will Confer with the Government

Inspired with a patriotic desire to give the Government the best possible service during the war, men from all sections of the country, and representing almost all important scrap iron dealers and brokers in the United States, met in the Fort Pitt Hotel, Pittsburgh, May 15 and 16, and formed the American Board of Scrap Iron Dealers with the following officers:

William J. Shroder of Joseph & Brothers Company, Cincinnati, president; C. A. Barnes of the C. A. Barnes Company, Philadelphia, secretary and treasurer; Eli Joseph and Joseph Joseph of Joseph Brothers & Company, New York; Joseph Michaels of Hyman Michaels & Company, Chicago; Charles Dreifus of Charles Dreifus & Company, Pittsburgh; Vernon Phillips of Perry Buxton & Doane, Boston; A. J. Bialosky of Bialosky Brothers, Cleveland, and Harry Grant of the Grant Iron & Metal Company, Detroit, executive committee. The committee may later add to its membership.

Subordinated to the spirit of patriotism but outstanding in all of the addresses and deliberations was a cordial spirit of trade co-operation and service. speakers included a representative of the Federal Department of Commerce, a leading steel manufacturer, and prominent scrap dealers. Mr. Shroder presided and introduced the speakers. A number of members of the National Scrap Iron and Steel Association were present, and these men, constituting more than a quorum of that association, at a later meeting presided over by A. J. Bialosky, passed resolutions, declaring the old association disssolved and recommending that all its

members join the new organization.

William Crawford Hirsch of New York, editor of the Waste Trade Journal and Daily Metal Reporter, declared as the result of an interview in Washington with representatives of the National Council of Defense, the Department of Commerce and other Federal authorities, that by forming a live national association the scrap industry would be in position to advise the Government on matters pertaining to iron and steel production upon which scrap dealers are best informed. He quoted a telegram received from Dr. E. E. Pratt, chief of the Bureau of Domestic and Foreign Com-merce, in which Dr. Pratt stated that he gladly indorsed any movement "tending toward the efficient conservation of scrap iron and other waste materials by organized co-operation." Mr. Hirsch declared that if the right kind of an organization were formed, the scrap industry would have no difficulty in getting its views before the Government.

Mr. Shroder next spoke briefly. He reported that at an informal meeting of members of 18 representative scrap-iron firms held earlier in the day to consider the problems confronting the industry at this time, a committee of seven was appointed to present a plan at the general meeting that would meet the situation and serve the best interests of the Government and all concerned. He said that the committee of seven kept constantly in mind the paramount desire to help the Government get all the facts that would enable it to help the steel manufacturers of the country attain and maintain the maximum of production. The committee decided that the best means to this end would be the formation of the American Board of Scrap Iron Dealers, to be formed only for the period of the war, and for the sole purpose of helping the Government to solve war problems.

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Mr. Shroder stated that it was the unanimous conclusion of the committee that the new organization should include every reputable dealer or broker in iron and steel scrap in the United States, whether large or small; that the association should have few officers and an executive committee with full power to form subcommittees and to exercise all the powers of the association between meetings; that there should be an initiation fee of \$100 for each member to meet the first expenses of the association, and that assessments should later be levied as required.

Formal organization was then completed along the lines suggested and the officers above named, who represent all of the important scrap iron producing and consuming centers of the country, were unanimously elected

"Unless the greatest encouragement is given by the Government to the collection of all available scrap there is grave danger that the steel mills will be unable to supply the urgent demands being made upon them," said Mr. Shroder. "A shortage of iron ore is feared, and this makes it even more urgent that every pound of scrap be collected and distributed where it can be utilized to the best advantage.

"The scrap dealers of this country are saving the steel mills and the country fortunes in money, and immeasurable amount of time by getting scrap iron and steel from the point of production to the nearest point of consumption without waste of time or money. Big tonnages of scrap are also made available for the mills by the sorting yards maintained by scrap dealers, where miscellaneous material that could not be utilized by any single plant is sorted and graded, thus making the different grades available where needed. Converting yards also create usable scrap by reducing material to charging box or cupola size.'

P. H. Bates, chief of the Bureau of Standards of Pittsburgh, of the Department of Commerce and Labor. was the next speaker.

"If you had had such an organization," he declared, "the Government would have been ready and willing to ' receive and accept its advice when the car order that has caused so much commotion was under consideration, and when any other matters affecting the iron and steel industry were up. I hope and believe that you will decide before the war comes to an end to make this a permanent national association. Your problems will undoubtedly receive proper recognition at Washington if properly presented. Undoubtedly your troubles can be and will be greatly relieved. There is one suggestion that I would make as strong as possible, and that is that you present your ideas and suggestions in person, and not by correspondence."

Edward E. Hughes, president of the Rail Steel Bar Manufacturers' Association and an official of the Chicago Railway Equipment Company and its subsidiaries, spoke briefly from the viewpoint of the consumer. He expressed pleasure in having been present when the association was formed and joined with Mr. Bates in the hope that the body would be made a permanent one.

"Scrap is absolutely necessary in the manufacture of steel," asserted Mr. Hughes. "My company has two large malleable plants. By scrap we live, cannot live unless the railroads supply sufficient cars to keep us adequately supplied with scrap. The Chicago Railway Equipment Company is making a great deal of car equipment for the Allies, such as brake beams, and is also supplying our own Government with many products that are urgently needed. If we do not get our scrap, we cannot do our part to help the Government in the successful prosecution of the war. the steel men to co-operate with you. Go to Washington, and show the Government the necessity of scrap in making steel. As president of our association and as a representative of steel mills I want to assure you we are heartily with you and will do anything possible to help you.'

Mr. Michaels made a short impromptu address that aroused enthusiasm. "We have organized to help and not to hinder, and to be of service, and to co-operate with all other interests in order to further the aims of our Government," he said. "I want to impress upon you that serious times are ahead which must have the reason that I congratulate you upon having organized this association. It is my theory that the old association was a failure because it was without definite purpose." serious consideration of competent men. It is for this

About 50 representative scrap men signed the membership roll as charter members, and assurances were given that nearly every scrap dealer and broker in the country would join.

## Shaping Machine with Helical Gears

All of the 24-in. back-geared crank shaping machines built by Queen City Machine Tool Company, Cincinnati, will in the future be equipped with helical gears. This change was made, it is stated, on account of the better finish that can be obtained on the work by the use of



The Equipment of This 24-In. Back-Geared Crank Shaping Machine Includes Helical Gears Which Give Noiseless Operation and Freedom from Backlash

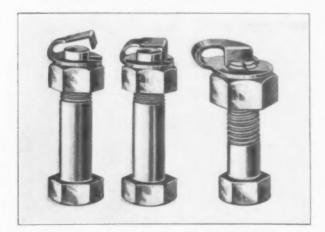
this drive. Practically noiseless operation is secured with this type of gearing, and in addition backlash has been eliminated and the vibration reduced. The gears are cut with a comparatively small angle, 14 deg. 55 min., thus insuring at least three teeth being in mesh at all times. This arrangement, it is emphasized, gives a continual rolling motion without shock.

Other features embodied in the construction of the machine include heat-treated journals with ring-oiling bearings, the use of semi-steel castings and a fully inclosed quick-change mechanism. This last, it is pointed out, reduces the accident hazard with the machine, as there are no moving handles for the operator to manipulate.

## New Types of Lock Washers for Bolts

As a substitute for the castellated nut as a locking device, the H. C. Hart Mfg. Company, Unionville, Conn., has developed a patent safety lock washer. It is made in two types, one of which is slotted and the other punched with a round hole.

The first of these washers is intended for use with



The Locking of the Washer at the Left Is Effected by Inserting the Lip in the Slot, While in the Other the Washer Is Screwed Down to Bear Against the Nut and the Lip Forced into the Slot in the End of the Bolt

a bolt having a slotted end, and its method of application is shown at the left of the accompanying illustration. The bolts with which these washers are intended to be used are provided with a slot between the end and the threaded portion. The slotted washer is slipped over the bolt end, after which the lip is closed down to lock the nut. When it is desired to remove the lock, a pair of pliers or a screw driver is employed to raise the lip, after which the washer is slipped from the bolt.

The other type of washer is screwed down on the bolt until it bears against the upper surface of the nut. The lip is then forced into the slot in the end of the bolt, as shown.

The washers are made for use with bolts ranging from 3/16 to 9/16 in. in diameter, while the second type is also made for bolts % in. in diameter. The washers are made from soft Bessemer steel and it is claimed can be used 20 times without cracking. The bolts used with these washers are of the standard type with the exception of the slots and can be supplied by the Hart company at an advance of \$1 per thousand over the market price to cover the cost of the slotting.

## Results of New Bullard Employment Plan

The working out of the employment plan recently adopted by the Bullard Machine Tool Company was described at the April meeting of the Meriden, Conn., section of the American Society of Mechanical Engineers by E. T. Bullard, president of the company. Under this system promotion of workmen and increased pay are taken care of automatically. A bonus is paid for each week that the employee works full time, the voucher being paid 30 days later if he is still in the company's employ and a premium is paid for production above the standard amounts. Insurance without medical examination is provided and the workmen's welfare is looked after, help being given in the case of sickness in the home. While wages are higher under this system, the cost of production has been reduced so that both the workmen and the company are benefited. The trouble formerly experienced with loss of help and the necessity of breaking in new men has been practically eliminated under the new plan. Only four men out of more than 1100 on the payroll left the employ of the company in March and an average of 1500 applications for work are received per month, thus enabling the company to close its employment office.

#### Substitute Alloy for Platinum Crucible

A substitute for platinum crucibles for laboratory purposes has been brought out by a California maker. It is an alloy of gold and palladium, called Palau. A crucible of this ware has been tested at the United States Bureau of Standards. The loss in weight on heating to 1200 deg. C. is intermediate between that suffered by crucibles of platinum containing 0.6 and 2.4 per cent iridium, respectively. The melting point of the alloy is 1370 deg. C., which corresponds to that of an alloy of 80 per cent gold and 20 per cent paladium. In resistance to most of the chemical reagents to the action of which such ware is ordinarily exposed. Palau compares favorably with ordinary platinum ware. The one noteworthy exception is fused alkali pyrosulphate which attacks it much more than it does platinum.

The Society of Automotive Engineers will hold its summer meeting in Washington at the Bureau of Standards June 25 and 26. At an informal dinner on the evening of June 26, Secretary of War Newton D. Baker will give an address. Papers of practical interest will be read on Tuesday, June 26, two members of the British Commission presenting important contributions on war airplanes.

The Youngstown Sheet & Tube Company, Youngstown, Ohio, reports that in March it shipped 122,852 tons of semi-finished and finished steel, the heaviest shipments in any one month in its history.

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## REFINING CANADIAN NICKEL

## Two Plants Under Construction—Report of a Government Commission

A commission was appointed some months ago by the Canadian Government to study the nickel problem. It consisted of George T. Holloway, vice-president of the Institution of Mining and Metallurgy; Dr. W. G. Miller, provincial geologist, and McGregor Young, a lawyer of Toronto, with Thomas W. Gibson, deputy Minister of Mines, as secretary. Their report has just been issued, making a volume of 600 pages. The investigations included visits to all the leading countries concerned.

The two questions uppermost in the numerous discussions concerning Ontario's nickel industry in the last 25 years are: Can nickel be economically refined in Ontario and are the nickel deposits of Ontario of such a character that the province can compete successfully as a nickel producer with any other country. The report unhesitatingly answers these questions in the affirmative and states:

Any of the processes now in use for refining nickel could be successfully worked in Ontario, and conditions and facilities are at least as good in this province as in any other part of Canada. In view of the fact that practically no chemicals are required, that there is a much more complete saving of the precious metals, especially platinum and palladium, and that electric power is cheap and abundant, the most satisfactory method of refining in Ontario will be the electrolytic.

The methods employed at the Ontario plants of the two operating nickel companies are modern and efficient, although there are differences in both mining and smelting practice. It is the consistent policy of both companies to adopt all modern improvements in plant or treatment. Even during the present time of acute pressure the Canadian Copper Company has materially increased its output without substantial enlargement of its plant, and the losses in smelting are less, both at Copper Cliff and the Mond plant at Coniston, than they were a year ago. These companies have each had their experimental stage, neither has asked nor received any Government assistance, and both have earned the success which they have achieved.

### Two Canadian Refining Plants Building

Two large plants for the refining of nickel are being erected in Canada, according to the report. One is the property of the International Nickel Company of Canada, Ltd., situated at Port Colborne. The company has obtained a site of 400 acres on which 2000 men are now at work. The initial output will be approximately 15,000,000 lb. of refined nickel per annum, provision being made for doubling or quadrupling this capacity.

The mate to be refined here will come from the smelters of the Canadian Copper Company at Copper Cliff.

For the treatment of this there is a copper Cliff. For the treatment of this there will be required bitu-minous coal, coke, fuel oil, niter cake and other chemcals and materials, estimated at 100,000 tons annually. The plant is expected to be in operation by autumn of the present year. The second refinery is that of the British America Nickel Corporation, Ltd., controlled and largely financed by the British Government, which has purchased the large Murray mine, the Whistle and other deposits in the Sudbury region. This refinery will be erected at the Murray mine, about three miles from Sudbury. Sudbury. Electrolytic refining will be employed, using the Hybinette process, now successfully employed in Norway. The output of the Murray plant will be 10,-000,000 lb. of nickel per annum. A custom smelter may also be erected as a stimulus to owners of nickel deposits of minor importance.

The production of nickel as a by-product was also avestigated. It is of considerable importance and comes mainly from the electrolytic refining of blister copper, as copper ores almost invariably carry a small proportion of nickel. About 815 tons was obtained in 1915 through the refining of copper in the United States, and the tremendous increase in the production of copper will largly increase this quantity.

The great use of nickel is in the manufacture of nickel steel, the ordinary form of which contains about 3.50 per cent of the metal. Compared with ordinary

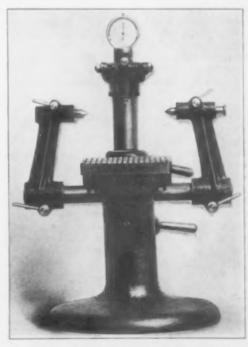
carbon steel, nickel steel has much greater strength and ductility, and is used in a wide range of industrial operations as in the manufacture of armor plate, ordnance, projectors, protective deck plate, gun shields and other classes of naval and military equipment. Large bridges at New York and over the Mississippi and Missouri rivers, dams, docks, the spillways on the Panama Canal and other large structures illustrate the usefulness of nickel steel. For locomotive forgings, marine engines and shaftings wire cables, automobile parts and the like, there is a large and growing use. Many useful alloys of copper and nickel are produced, used for various purposes, such as bullet casings and plumbers' supplies. Large buyers and consumers in Great Britain and the United States express the opinion that the uses of nickel will be extended and that when normal peace conditions are restored, the demand will prove to be greater than before the war. A reduction of the price would undoubtedly increase the consumption and necessitate increased production.

#### Nickel-Copper Steel

The report also refers to a possible product from the Sudbury ores and slags, namely, nickel-copper steel. A prejudice has existed against the presence of copper in steel, but recent tests have shown that the objections were not in all cases well founded, if the copper percentage is not too high. The presence of a limited proportion of copper in steel is beneficial for some purposes, and it is also capable of advantageously replacing a proportion of the nickel in nickel steel up to at least one-third of the combined quantity of nickel and copper. Experiments made for the commission by Prof. George A. Guess, of Toronto University, fully confirmed these conclusions.

## Amplifying Gage for Production Work

As a substitute for the snap gage employed in machine shops and toolrooms, the North Side Tool Works, Dayton, Ohio, has brought out an amplifying gage. Two types are made, the universal for measuring two dimen-



Amplifying Gage for Tool and Production Work Designed to Take the Place of the Snap Gage to a Great Extent for Pieces Not Over 8 In. In Length and 5½ In. Thick

sions, which is illustrated, while the other style is designed for measuring thickness only. The universal gage is designed for taking work up to 5½ in. thick and 8 in. long.

In operation the three gage points are set to the required dimensions, after which the pieces are inserted one at a time, the dial showing whether they are the

proper size or how much the work is over or under size. Each division on the dial is equivalent to 0.0001 in.

If desired, special fixtures can be supplied to go with the gage. When the gage is to be used with irregularshaped pieces the builder recommends that a sample piece be sent so that a special fixture may be designed.

## HIGHER RATE FOR PUDDLING

#### New Wage Scale Proposed at Amalgamated Convention

The scale committee of the Amalgamated Association, in session at St. Louis, has formulated a new wage scale for puddling that calls for an increase of 50c. per ton over the present scale, which expires June 30. The proposed scale calls for a rate of \$6 per ton for puddling, based on a 1c. bar iron card, the rate on the present scale being \$5.50 per ton on a 1c. card. full scale as proposed by the wage committee of the Amalgamated Association, compared with the present scale, is as follows:

	Boiling		per Ton, 0 Lb.
	sed on Actual Sales of Bar Iron, as per onference Agreement	Present Scale	Proposed Scale
1 c. ba 1.05c. ba 1.10c. ba 1.15c. ba 1.20c. ba 1.35c. ba 1.35c. ba 1.35c. ba 1.40c. ba 1.45c. ba 1.50c. ba	r iron. r iron. r iron	\$5.50 5.60 5.70 5.80 6.00 6.50 6.70 6.90 7.10 7.30 7.50 7.70 7.90 8.10 8.30 8.55	\$6.00 6.10 6.20 6.30 6.40 6.50 6.65 6.80 6.95 7.10 7.50 7.50 7.50 7.50 8.10 8.30 8.55 8.80
1.90c. ba 1.95c. ba 2 c. ba	r iron	9.05	9.05 9.30 9.55

It will be noted from the above that the proposed 50c. advance per ton in boiling applies until the bar iron card reaches 1.40c., after which the boiling rate remains the same as at present. Advances in wages have also been asked on the scales for busheling on cinder bottom, also on sand bottom, muck rolling, and on other bar iron labor. The advances in the puddling scale will be discussed with the bar iron manufacturers at a conference to be held very soon after the convention in St. Louis adjourns. It is probable also that advances in the present scales for sheet and tin plate mills will be demanded. These scales will likely be formulated this week.

At the bi-monthly conference held last week, committees of the Amalgamated Association and the Western bar iron mills, it was found that the average price on shipments of bar iron in March and April was 2.45c., this giving puddlers an advance of 50c. per ton, or from \$11.30 to \$11.80 for May and June. It was also found that the average price on shipments of sheets and tin plate in March and April, entitled the sheet mill hands to an advance of 15 per cent, and tin mill labor 16 per cent for May and June.

#### American-Russian Trade Handbook

The American-Russian Chamber of Commerce of New York announces that the 1918 edition of "Industrial America," the handbook of industrial, com-mercial and financial information, together with a classified trade directory of American firms for use in Russia, is now in course of preparation. American manufacturers who are interested in the Russian field are invited to forward to the American-Russian Chamber of Commerce, Woolworth Building, New York, information regarding their firms and their products for listing in the trade directory section of the handbook. There is no charge for such listing, the purpose of the directory being to place before Russian purchasers the most complete and comprehensive list possible of responsible American firms who can supply the wants of Russian consumers.

## South American Steel Trade as Seen by a German

A German who made his way to South America in the spring of 1915, and who is apparently still there, sends to Stahl und Eisen, according to the London Ironmonger, an account of the iron and steel trade in Brazil, the Argentine and Chile under war conditions. It is given below, as written in November, 1916, before the United States became a belligerent:

Up to the outbreak of the war Brazil and the Argentine bought from the United States only a small part of their requirements of iron and steel. The lion's share of the trade fell to England, and the second place was held by Belgium But since the year 1906 German products were rapidly coming to the fore, and orders sent to Germany were stated to be "accurately executed and punctually delivered." In the Argentine, Brazil and Uruguay most iron and steel merchants who hold stock are Italian, English, French. Belgian or Spanish, the German being usually only an agent. The Mannesmann Tube Company is an exception, with its own warehouses in each of the three countries. In Chile the position is rather different, for there, some time before the war, the United States Steel Corporation set up an organization which might serve as an example to German manufacturers Its headquarters are at Santiago, and it has ramifications all over the country. It is not easy to explain why the Americans settled on the west coast, which holds but few prospects for the future, while they continued to neglect the east coast. The only effect of the war on the iron business of the South American west coast is that the Americans are asking higher prices for their stocks, and are making the utmost of their temporary monopoly.

In Brazil and the Argentine nearly all iron and steel imports from Europe stopped early in the war. Weak attempts were made by the manufacturers at Bilbao, in Spain, to start an export trade, but they collapsed and there remained only the United States. Agents and other travelers for American firms began to infest the country, and efforts were made, by issuing Spanish catalogs and engaging travelers who knew the language, to fall in with the customs of the Continent As soon as they felt assured that their monopoly could not be disturbed, the Yankees made themselves so thoroughly detested by merchants and consumers alike that everyone is now longing for the moment when the American yoke will be

lifted.

With proper management and tact the Yankees might have continued to draw profit from these new markets long after the war, but the Steel Corporation increased its prices by such leaps and bounds and so often that architects and builders were unable to give any reliable estimates. All customers were required to pay by confirmed bankers' credit in New York, a condition which, owing to the sharp fluctuations in the rate of exchange, entailed a considerable risk to the buyer. No time of delivery was guaranteed, the only promise being to deliver "as soon as possible," which might mean anything up to 12 months or more. Claims for incorrect of unpunctual delivery were ignored, quotations only held good for 24 hours, and it was stipulated that every increase in the calculated freight prices must be borne by the buyer, although the offers were c.i.f. In October, 1916, the Steel Corporation withdrew from the market, claiming to be sold out to the end of 1917. Partly for this reason, and partly lured on by the enormous prices, several independent American companies, among others the Bethlehem Steel Company, Jones & Laughlin, the Gulf States Steel Company, the Cambria Steel Company and the Knoxville Steel Company, began to make quotations, but so far they have not sold much, the greater part of their trade being sample deliveries, but the increased offers have resulted in an all-round lowering of prices.

### Mining Company Officers

At the annual meeting of stockholders of Biwabik Mining Company, held in Youngstown, Ohio, last week, officers were elected as follows: H. H. Stambaugh, president; W. A. Thomas, vice-president; Frank Billings, secretary, and N. B. Folsom, treasurer; H. H. Stambaugh, John Stambaugh, W. A. Thomas, G. F. Alderdice, W. W. Baldwin, E. L. Lord and D. G. Kert, directors. The Pennington Mining Company also elected of the company a elected officers as follows: Frank Billings, president; W. A. Thomas, vice-president; J. J. Hendrickson, servetary, and N. B. Folsom, treasurer; Frank Billings, president, and N. B. Folsom, treasurer; Frank Billings, president, and N. A. Thomas and J. A. Thomas and John N. Allen, directors. The Brier Hill Steel Company is a very large holder in the above named properties, and secures most of the ore used in its Grace and Tod blast furnaces from the mines of these two

## SERVICE RETIREMENT PLAN

## Details of the Colorado Fuel & Iron Company's Provision for Employees

At a recent meeting of 150 employees' representatives and company officials at the Minnequa Club, Pueblo, Col., President J. F. Welborn of the Colorado Fuel & Iron Company announced that the company had prepared a service retirement plan under which an employee who had to his credit the stipulated years of service could retire on an income equivalent to 30 per cent of his average earnings for the 10 years preceding retirement. An exceptional feature is that an employee is given credit for all the time he has served the company, regardless of whether his service has been continuous. It is pointed out, however, that a man wishing to leave the service temporarily should secure a leave of absence, especially if he is past the age of 45, which is the age limit for new employees, or if for any cause he could not pass the physical examination required of new employees. In view of the fact that at least one service retirement plan that had been in effect for some years in the steel industry was modified a few years ago, the features of this latest plan are of special interest. The outline as prepared by the directors of the Colorado Fuel & Iron Company is given in full below:

The Board of Directors have adopted the following service retirement plan for employees, in appreciation of their long and faithful service.

#### 1. Service Retirement Board

The administration of the service retirement plan shall be in charge of a service retirement board (hereinafter designated the board), consisting of five officials of the company, appointed by the President and approved by the Board of Directors.

The board shall elect a chairman and a secretary

from among its membership.

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A majority of the board shall constitute a quorum for all purposes.

#### 2. Eligibility

All employees and officials, except the President, who have given their entire time to the service of this Company, including its subsidiaries, are eligible for service retirement payments under the following conditions:

All men who have reached the age of 65 years, and women 55 years, and who have been 20 years or longer in the service, shall be retired, unless, in individual cases, in the discretion of the retirement board and the Board of Directors, some later date be fixed for such retirement.

Any man who has reached the age of 60 years, or any woman 50 years, who has been 30 years or longer in the service, may be retired, either at his or her request, with the approval of the board and of the president, or without the request of the employee in the discretion of the board and with the approval of the president.

Any employee who has been 15 years or longer in the service and who, by physical examination, is shown to be permanently totally incapacitated for any service, may, in the discretion of the board and with the approval of the president, be granted a special allow-

Any employee whose retirement on account of advancing years is, in the judgment of the board, advisble, and who has been at least 20 years in the service, may, in the discretion of the board and with the aproval of the president, be retired and granted a reglar or special allowance.

## 3. Amount of Payments

The monthly payments for regular allowances which he board may authorize under this plan shall be 30 er cent of the average pay per month of service durag the 10 years next preceding retirement; but no egular allowance shall be less than \$20 per month.

Illustration: A retired employee whose pay during the 10 years next preceding his retirement, has averaged per month, will receive 30 per cent of \$80, or \$24 per month.

The amount and duration of each special allowance shall be determined by the board.

#### 4. Service-How Reckoned

The term of service shall be reckoned from the date of beginning either with this Company or with any one of the various companies and properties that now compose it. Credit shall be given for the time the employee is actually on the payroll and in active service.

### 5. Payments

Payments shall be made through the regular disbursing office at the close of each month, and unless otherwise provided shall terminate with the death of the retired employee.

In the discretion of the board, these payments may be continued to widows and orphans for a limited period.

In order that employees retired under this plan may continue the personal enjoyment of the benefits granted them, no assignment of amounts authorized will be permitted or recognized under any circumstances. As these allowances are purely voluntary, they shall not be liable, before payment, to claims of creditors or to any attachment or execution for debts of the beneficiaries.

#### 6. General Regulations

No one retired under this plan shall be barred from engaging in any business not prejudicial to the interests of this company, or of any subsidiary company, but he cannot re-enter the service.

Allowances may be withheld, suspended or terminated by the board in cases of misconduct, violation of law or of these rules, or for other causes sufficient, in the judgment of the board, to warrant such action, or, in the discretion of the board, may be paid to some other member of the family.

This service retirement plan is a purely voluntary provision for the benefit of employees retired after long and faithful service and constitutes no contract and confers no legal rights upon any employee.

The service retirement plan does not give to any employee any right to be retained in the service in addition to that guaranteed in the industrial representation plan, nor does it deprive any employee of any right guaranteed to him by the plan."

#### Ohio Safety Engineers Officers Elected

The Society of Ohio Safety Engineers, Columbus, Ohio, has elected the following officers for the ensuing year:

President, C. E. Pettibone, Pickards Mather & Co., Cleveland; vice-president, J. M. Woltz, Youngstown Sheet & Tube Company, Youngstown; secretary-treasurer, E. R. Rose, Republic Iron & Steel Company, Youngstown, and assistant treasurer, G. F. Hodgson, Republic Public Company, Youngstown

Republic Rubber Company, Youngstown.

The society was formed at the second annual state industrial safety exposition held at Cleveland, in January, 1916. Its purpose is to promote and devise safety standards for the prevention of accident to life and limb.

The Bureau of Mines, Department of the Interior, in its efforts to improve health conditions in mining and metallurgical industries, is investigating the effects of dusts in mines and metallurgical plants on those employed therein. It has just issued, in co-operation with the Public Health Service, technical paper 153, "Occurrence and Mitigation of Injurious Dusts in Steel Works," by J. A. Watkins, passed assistant surgeon, Public Health Service. It is shown that dust may act injuriously in three different ways, depending on the character of the dust particles—by irritant action, by toxic action, and by mechanical action.

The Bethlehem Steel Company, South Bethlehem, Pa., has awarded a contract to the Thompson-Starrett Company, New York, for the building of 1500 houses for the employees of the steel company. Six months is the time called for the completion of the houses, 500 of which are adjacent to South Bethlehem and 1000 east of Bethlehem borough.

ESTABLISHED 1855

## THE IRON AGE

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## Rapid Steel Price Advance

The steel trade has become so accustomed to spectacular price advances that the special rapidity with which prices have been advancing of late may be overlooked. The general advance began Jan. 1, 1915, the preceding month having seen, for most commodities, the lowest prices since 1898. While there were various fluctuations in the rate of advance, it may be said in general that up to Oct. 1, 1916, there were no advances as rapid as those that have since occurred. From Oct. 1, 1916, to Feb. 1 of this year they were decidedly more rapid, but since Feb. 1 the pace has increased decidedly. Striking an average of all important finished steel products, for delivery at mill convenience, the advance in the 21 months up to last October was about \$1.40 per net ton per month. In the next four months, to February of this year, it was about \$3.35 per month, while since the beginning of February it has been more than \$5 per month. The advance in the entire movement has been more than \$60 a ton, approximately as much in finished steel per net ton as in billets per gross ton. This fact, by the way, indicates that the finishing mills, not producing their steel, are making their profits chiefly by having steel due them on contract at less than the current market.

The division of the general advance into periods brings out two striking facts. A great deal of the steel now being delivered was sold at prices ruling prior to last October, more than seven months ago. Since this material was sold the market has been advancing more rapidly. Again, price advances have been more rapid since Feb. 1 when, on account of the inception of the new German submarine policy, it became probable that the United States would enter the war.

The fact that consumption of steel is not reduced, that the pressure upon mills for deliveries is as great as ever, indicates that consumers have been able to pay the successive price advances that occurred up to about last October, but it does not necessarily prove that they will be able to pay higher prices for full tonnages, when the rate of advance since then has been so much more rapid. That buyers have undertaken to pay the prices, by urging mills to book their contracts at prices ruling during the last few months, is suggestive of their intention or hope rather than of their actual ability.

That steel prices have been advancing more rapidly since war became the probability than they did at any previous stage in this general movement does not necessarily reflect a clear grasp of the situation and prospects by either sellers or buyers. The market has been made in haphazard fashion for a long while. At various times the mills have manifested a disposition to withdraw from the market, to be met by higher bids on the part of buyers, who admittedly have been moved more by their fears than by their judgment. When war became probable the buyers knew that the Government would require large tonnages of steel, which could be obtained only by delaying deliveries to other customers. The majority of the buyers, jobbers and manufacturing consumers did not know that the demand upon them for their wares would increase, or even that it would be maintained. Fluctuations in the ordinary domestic demand for steel may easily represent a larger tonnage, however, than the quantity of steel required by the Government.

It is well recognized that steel is not being bought by large investors in the proportion that usually obtains when the steel demand in general is heavy. The steel bought by the rank and file, for what might be called common everyday consumption, has correspondingly increased. Three years ago no one would have dreamed that the demand for steel could reach its present proportions without there being a very large amount of investing in permanent structures, calculated to yield interest returns over a period of years. Thus, from one angle, it might be judged that the situation in steel demand is one of pay as you go, with no untoward possibility, like the frightening off of investors, to threaten the future.

At the same time the common everyday buyers of steel must have their economic limit. They have not made the present market, as steel at present mill prices is not yet reaching them. At the beginning of last October the Steel Corporation was sold up on an average to approximately the present date. Other mills were in substantially the same position. To the period of mill delivery must be added the period that elapses from the mill shipment to receipt of the finished product by the ultimate consumer. Thus the advance in steel prices that has occurred since Oct. 1 is perhaps not the full measure of the advance the ultimate consumer must pay over prices he is paying now. Of course there are exceptions,

but in terms of the total finished steel output, which is now about 3,000,000 net tons a month, the advance is equal to \$100,000,000 on a month's output, as the steel advance since the beginning of last October is in the neighborhood of \$33 a net ton. If there are to be further advances the strain upon the economic resources of the people would be proportionately increased. If the middle interests, standing between the steel mill and the ultimate consumer, put up their prices in proportion, as they necessarily must, the bill to be paid by the ultimate consumer will increase in still greater measure. Eventually he would be unable to stand the strain. The only question is when the limit would be reached. At various times in the past it has seemed that the steel market had probably reached its limit, that the mills would not be able to do much more than empty their order books before a price readjustment would be forced. Thus far these various expectations have successively been disappointed. Finally the time will come for such a prognostication to prove correct.

## Fair Treatment of Scrap Dealers

In these days when one hears so much that is commendable about the conservation of natural resources, it might reasonably be expected that the man who collects old material and makes it possible to use it in manufacturing processes would be considered a benefactor of society entitled to all the consideration due to one engaged in a legitimate business. Unfortunately, however, it has often been true that the dealer in old iron and steel, commonly known as the scrap dealer, has received scant consideration at the hands of officials. This fact has been illustrated in a striking manner in the attitude of the Government in diverting open top cars from the use of the old material dealer to that of other shippers, particularly those dealing in iron ore and coal. The idea seems to be that the scrap dealer and user ought to be satisfied with any kind of a car.

Recently the troubles of the dealers in old material have been many, and increasing in seriousness. Their business is not as simple as it seems to one who is not informed in regard to it. It often involves the sorting, cutting and handling of large quantities of scrap to make it suitable for use in steel and iron mills. This service is a real one and is recognized by the iron and steel manufacturer, but it has been carried on with increasing difficulty on account of the scarcity of labor, and the taking from the scrap business of the open top cars from which the scrap can be lifted by magnets has increased the demand for labor, which already was far short of the supply.

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In view of these facts and of others that might be stated, it was highly important to dealers in old material to take some united action to show the Government the importance of the scrap business to the manufacturers of iron and steel and to urge that fair treatment be given the old material industry. The meeting in Pittsburgh last week, of which an account is given elsewhere in this issue, was attended by representative men, and the formation of the American Board of Scrap Iron Dealers' promises to accomplish much in bringing about a

better understanding between the dealers and the Government. The new organization is entitled to the hearty co-operation and support of iron and steel manufacturers.

## Home Duties in War Times

Some of the statements made by President Wilson in his proclamation in regard to the selective draft are important truths which he has clearly put, truths that cannot be too forcibly impressed upon the American people.

"The men who remain to till the soil and run the factories," says the President, "are no less a part of the army that is in France than the men beneath the battle flags. It must be so with us. It is not an army that we must shape and train for war; it is a nation. To this end our people must draw close in one compact front against a common foe. But this cannot be if each man pursues a private purpose. All must pursue one purpose. The nation needs all men; but it needs each man, not in the field that will most pleasure him, but in the endeavor that will best serve the common good. Thus, though a sharpshooter pleases to operate a trip-hammer for the forging of great guns and an expert machinist desires to march with the flag, the nation is being served only when the sharpshooter marches and the machinist remains at his levers."

In these lucid words the President shows every man who obeys the conscription law and gives the Government an opportunity to assign him for service in the field or at home that he cannot justly be called a slacker. Some plan of recognition or reward of every man who serves his country in the shop or on the farm should be devised as a permanent record of as great value to a man and his posterity as an honorable discharge from the army. This would be in harmony with the President's declaration that the selective draft "is no more a choosing of those who shall march with the colors than it is a selection of those who shall serve an equally necessary and devoted purpose in the industries that lie behind the battle line."

If the present war shows as no other war has done the dignity and importance of every man doing his utmost all the time, in peace and in war, in the quiet walks at home or at the battle front, in the shops or in the field, if it shows more clearly that it is not merely the spectacular and the bloody that is noble, it will do the world a great service.

It is well that the day of registration, June 5, is not made a holiday. The President explains his position on this point: "It is essential that the day be approached in thoughtful apprehension of its significance, and that we accord to it the honor and the meaning that it deserves. Our industrial need prescribes that it be not made a technical holiday, but the stern sacrifice that is before us urges that it be carried in all our hearts as a great day of patriotic devotion and obligation, when the duty shall lie upon every man, whether he is himself to be registered or not, to see to it that the name of every male person of the designated ages is written on these lists of honor."

In recent years there has been a tendency in this country to follow the example of England in establishing too many holidays. Employers and em-

ployees can and will do their duty June 5 in registering or seeing that others do so and without giving up all other kinds of work.

## Business Papers' Activity

An example of practical patriotism is furnished by the publishers of business papers located in New York in co-operating with the Citizens' Preparedness Association of New York State in obtaining recruits for the National Guard on a trade quota basis. According to the orders which have been issued to recruit the National Guard to war strength, about 10,000 men will be needed and the business papers are endeavoring to obtain that number, believing that they can be supplied without crippling any industry, particularly any trade that is directly connected with the furnishing of munitions or other war supplies. It is planned to do this important work systematically and quickly, so that the required number of recruits for the Guard, between 18 and 45 years of age, will be obtained at a very early date. If recruits cannot pass the physical test, they will be given an opportunity to perform patriotic service at home in the Home Defense League or in some other activity.

THE IRON AGE wishes not only heartily to endorse the movement which has been inaugurated in New York, but to suggest that similar opportunities will doubtless be found in other states whereby the National Guard can be fully recruited and Home Defense leagues and other organizations enlarged so that they will be able to render service of a highly important character.

## Over-Demand for High-Silicon Iron

It is not surprising, considering conditions that have confronted the producers of pig iron in recent months, that some of them should be turning away from the production of the higher silicon foundry grades. The difficulties under which furnacemen have worked are well known, especially the uncertainty and inadequacy of the coke supply, not only because of the scarcity of coke itself but because of embargoes and delays in transit.

Not only have furnaces been forced to the maximum to meet the pressure of demand, but the call for iron high in silicon has developed far beyond that of previous years, and has taken no account of furnace irregularities such as are inevitable under recent and present conditions. High-silicon iron requires high heat to an extent that entails for some grades the use of several hundred pounds additional coke per ton of iron made. It also means smaller production at a time when the maximum output is needed. While higher silicon irons bring higher prices, they do not bring enough more, furnace operators find, to offset the disadvantages, including the more severe wear on furnace linings.

The abnormal demand for irons containing 2½ per cent silicon and over, which is apparent in some sections of the country, is largely traceable to the desire of the founder to melt a large percentage of scrap, the price of which, while high as compared with the average of normal times, is nevertheless so low as to be disproportionate with the present cost of pig iron. Therefore he buys comparatively

cheap cast scrap and puts the burden of supplying softener on the producer of pig iron.

Pig-iron producers argue that this is a time in which the consumer, even in his own interest, should co-operate to the fullest extent and so far as possible accept iron which can be made to accomplish the desired result regardless of analysis. Prejudice and disinclination to depart from established custom are strong, but many departures are being recorded in other lines. Former users of galvanized sheets are using black sheets. Electrolytic copper is being used where Lake was formerly believed to be indispensable. Banca tin has been found an acceptable substitute for Straits tin in many cases. Bessemer steel is being taken in place of open-hearth steel. And the examples could be multiplied.

A solution to which some foundrymen are resorting is the use of iron containing a normal amount of silicon, a percentage of scrap, and the enrichment of the mixture with silvery grades. But the latter are none too plentiful and are high in price. The question is whether the growing use of high silicon iron is necessary or justifiable. The tendency has always been to specify higher silicon than was actually necessary, simply to be on the safe side; but under necessity a great many melters have found that satisfactory results can be obtained with lower silicon metal, and their number might profitably be increased.

#### The Case of a Coke Contract

Blast furnacemen have had a variety of experiences in the wide swings of values with which the pig-iron trade has been made familiar, and not the least interesting of these have grown out of the unprecedented coke situation of the past year. One case is mentioned in which a pig-iron producer some time ago received a letter from a coke company with which it had a contract running through 1917, suggesting an additional charge of 25 cents per ton on current deliveries, in view of the advance in labor at coal mines and coke ovens. The letter indicated that this was not all the increase in cost to which the coke producer had been subjected, but expressed the opinion that a 25-cent addition to the contract price would be fair, in view of the extraordinary changes in conditions since the contract was made, bringing the market price for prompt coke up to three or four times the price named in some yearly contracts.

The furnace company said in reply that under all the circumstances it was willing to pay the 25-cent advance asked. But the more remarkable part of the incident was what followed. The blast-furnace company at once sent a letter to a second coke company with which it had a contract for the year at substantially the same low price, saying that on request of another coke producer it had agreed to pay 25 cents per ton more and that in fairness to coke producer No. 2 it felt that the same advance should be paid on the latter's contract. Coke company No. 2 replied in substance that in all its experience it had not received such a proposal from a customer, but that while the offer as well as the spirit behind it was deeply appreciated and would never be forgotten, it could not be accepted; that the writer considered a contract a contract and would carry out the existing one in accordance with its terms.

Employees of the sheet and tin-plate mills in the Mahoning and Shenango Valleys, will have their largest pay in history May 24-26, as they will be entitled to the wage advance recently announced by that time. Puddlers in the independent mills will also profit by the wage increase in their department.

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## CORRESPONDENCE

#### Are Farmers Making Money?

To the Editor: I wish to take exception to Mr. E. F. Miller's letter, which appeared in THE IRON AGE, issue Mr. Miller states most emphatically that of May 17. the farmer is not making any money. I was brought up on a farm and I wish to cite a few incidents which came under my personal observation.

I have a very near relative who bought a large farm in this State. He was able to pay only about onehalf of the cost in cash. He borrowed the remainder, and since then he has been able to pay the interest on the money borrowed, as well as an important sum on the principal each year. Added to this he has been able to purchase an automobile and take several pleasure trips every year.

I could cite several incidents of this same kind, but

as they are all alike, it is not necessary

I visited my home not long ago and find that fully 75 per cent of the farmers of that community now boast the ownership of an automobile, and some of them two. Judging from this, it would not appear that the farmers are suffering, or have suffered, such losses as Mr. Miller would have us believe.

Mr. Miller also states that the farmers are unwilling to work from 10 to 14 hours per day in order to meet the demands of people who work only eight hours per day. If Mr. Miller were to be confined in some hot and stuffy factory or office every day of his life, he would then realize that it is much easier to work twice

as many hours out in the open air as it is in a factory. It is my idea that Mr. Miller's last paragraph explains why he wrote as he did. We all wish to make as much money as possible in any business venture, whether it be farming or any other business, and it is natural for us to defend any future anticipations.

B. A. Boggs

433 Chester Avenue, Lancaster, Pa., May 17, 1917.

#### Book Department of "The Iron Age"

The Book Department long maintained by the David Williams Company, publisher of THE IRON AGE, which has been an important arm of the service of this jour-nal, has recently been merged in the U. P. C. Book Company, Inc. The new corporation, which has offices at 231 to 241 West Thirty-ninth Street, has been formed by the United Publishers Corporation to carry on the combined book departments of the various journals published by its subsidiary companies. It is expected that the book department service so long rendered to IRON AGE readers will be made even more efficient under the new arrangement. The U. P. C. Book Company, Inc., is in charge of men of thorough experience in publishing and handling books in technical and trade lines, and the broader basis on which the business will now be conducted will be an advantage to all the publications represented and to their patrons.

Scrap steel turnings are being shipped to the United States from Moncton and vicinity, New Brunswick, according to U. S. Consul E. Verne Richardson of Moneton. Since April 1, 1917, during which month this business was inaugurated, there have been certified invoices covering seven carloads of this material, totaling 566,200 lb. and valued at \$2,188. The price has varied from \$5 to a maximum of \$10 per gross ton. It is stated that there is a strong demand for this scrap in the United States.

The Superior Steel Corporation, Seattle, Wash., has filed articles of incorporation with capital of \$750,000. G. Lewis Casey, Thomas H. Pidduck and E. W. French are the incorporators. Company announces it will manufacture steel in Seattle from ore mined in British Columbia.

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## Iron and Steel Markets

## MILL CONGESTION WORSE

Export Sales Wait on Government

Western Scrap Markets Active and Excited— Cotton Tie Price Fixed at \$2.10

With deliveries and mill conditions growing worse, capacity sold up to an extent precluding normal interest in new business, and with little certainty as to Government needs except that they will steadily increase, the steel trade moves on in an unsatisfactory way. In some lines consumers complain bitterly of poor service from the mills.

The letting of contracts by the Shipping Board for a number of steel vessels has been followed promptly by inquiries for plates and shapes, and it is evidently the plan to have such steel provided directly by the Government. Thus far the Steel Corporation has taken the brunt of the Government's plate demands and independent plate mills have been little interfered with in supplying their regular trade. This condition, from present indications, will not last long and plate producers who buy their raw materials view with concern the rising prices of pig iron and scrap. The Government's 2.90c. price on plates is below cost for some mills, though the pig iron now going into their steel was bought \$10 to \$15 a ton below to-day's market.

Progress is being made on the plans for united buying of steel and other metals by the Government and the Allies. In negotiating for 24,000 tons of wire rope, a portion of which goes to France, the Government has had the co-operation of wire mills, so that wire will be furnished the rope manufacturers as needed. As to prices on all further purchases of steel products the Government policy is not definitely developed. A copper price of 24c. to 25c., as now indicated, points to fairer prices for steel than those now paid for plates and shapes.

Foreign inquiries for steel are still large, and have been for weeks, but few orders come from them, since the mills do not care to make deals which later Government requirements will upset.

Russia's car requirements, which have been talked of for over a year, are given a better standing by the Government's loan to Russia. Car builders now expect the order will be for 10,000 to 30,000 cars of 40,000 lb. capacity. Domestic car orders of the week amount to 1500, and 2000 cars have been placed in Canada. New locomotive contracts total 500, and the two leading builders are well booked for months ahead.

One order Europe seeks to place is for 6000 tons of small angles. Italy would take tin plates in large quantities. There is revived interest in a 25,000-ton rail inquiry from Great Britain, one for 40,000 tons from Sweden, and the 300,000 tons Russia will need can be booked by any mill willing to take it.

The Carnegie Steel Company and other makers

of cotton ties announces \$2.10 per bundle of 45 lb. as the price for this season. Last year's contract basis was \$1.35. The \$2.10 price is in effect through June and on July 1 the carrying charge of 1c. per bundle per month goes into effect. It is estimated that the year's cotton crop will require 2,600,000 bundles.

Basic pig iron has figured in both Eastern and Central Western markets in the past week. A sale of 15,000 tons to an eastern Pennsylvania steel company for this year established an advance in that district to \$42, delivered. A Massillon, Ohio, steel company has taken 10,000 tons for the first half of next year. Sales of 2500 tons of Bessemer iron have been made at \$45, Valley furnace. Foundry pig iron is \$1 a ton higher at Chicago. For Southern foundry iron \$40, Birmingham, for prompt No. 2 and \$36 to \$38 for first quarter of 1918 represent the week's market.

An Eastern steel company has closed for 10,000 tons of coke per month for the second half of this year at \$8 at oven, and there are negotiations for 10,000 to 15,000 tons per month additional. With deliveries still much restricted and labor supply not likely to improve, coke producers are in a fair way to carry their contention for a contract price close to that which has ruled on spot delivery.

The Western scrap market has shown more likeness to the pig-iron market in the past week than in months. At Chicago under heavy buying by two steel companies, one of which is credited with purchases of 75,000 tons, prices have advanced in an almost unprecedented way to the point of making even sellers uneasy. St. Louis dealers made large sales to Chicago, while prices of some grades advanced more than \$3 per ton. All descriptions of scrap were swept up in the effort to get adequate supplies for open-hearth plants. Pittsburgh and Eastern markets showed no such activity, but at Pittsburgh low phosphorus melting stock has advanced \$2 a ton and heavy melting steel is held for higher prices.

## Pittsburgh

PITTSBURGH, PA., May 22, 1917.

The uncertainty as to the extent of the pending Government purchases of steel is still a dominant factor in the market. One definite Government inquiry is for 24,000 tons of wire rope for delivery in the last half of this year, and local rod mills will furnish most of the rods to be used in making this rope. Prices during the week have been steady, and on Bessemer pig iron are \$1 per ton higher, several sales of 1000 tons or more having been made at \$45 at Valley furnace and small sales at \$46 or higher. Sheet bars in fairly large lots have sold at \$95, Cleveland, for delivery in this district in June and July. Railroad spikes are slightly higher, and several grades of scrap are up about \$2 per ton. One large contract for high quality blast furnace coke has been closed for last half of the year delivery at \$8 per net ton, at oven.

Consumers of all kinds of finished steel are complaining bitterly about the poor service they are getting from the mills in deliveries. A leading steel car plant that ordinarily would use 1500 tons of plates per day, when running at full capacity, is not getting on the average more than 25 per cent of this quantity. This

## A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics At date, one week, one month, and one year previous

For Early Delivery

No. 2, Valley fu No. 2 Southern, No. 2, Birmingha No. 2, furnace, C Basic, del'd, east Rasic, Valley fu	ss Ton: 1917 Iphia \$44.0 rnace 43.0 Cin'ti 42.9 m, Ala 40.0 hicago* 45.0 ern Pa 42.0 rnace 42.0	0 \$43,50 0 42,00 0 42,90 0 40,00 0 44,00 0 38,00 0 42,00	1917. \$42.50 40.00 37.90 35.00 41.00 38.00 40.00	1916, \$20.50 18.00 17.90 15.00 19.00 20.50 18.00	Sheets, Nails and Wire,  Per Lb. to Large Buyers: Sheets, black, No. 28, P'gh Sheets, galv. No. 28, P'gh Wire nails, Pittsburgh Cut nails, Pittsburgh Fence wire, base, P'gh Barb wire, galv., P'gh	1917.	May 16, 1917. Cents. 7.00 8,00 3.50 3.75 3.45 4,35	April 25, 1917. Cents. 6.25 8.00 3.50 3.75 3.45 4.35	May 24, 1916. Cents. 2.90 4.75 2.50 2.60 2.45 3.35
Bessemer, Pittsb Malleable Bess., Gray forge, Pitt L. S. charcoal, C Rails, Billets, etc.	Ch'go*. 45.0 sburgh 40.9 hicago 50.2	0 44.00 5 40.95 5 46.75	42.95 41.00 38.95 41.75	21.95 19.50 18.70 19.75	Old Material, Per Gross T Iron rails, Chicago Iron rails, Philadelphia Carwheels, Chicago	\$34.50 35.00 30.00	\$32,50 34,00 25,50	\$33.00 33.00 24.00	\$18.00 20.00 13.00
Bess, rails, heavy O.h. rails, heavy Bess, billets, Pitt O.h. billets, Pitt O.h. sheet bars, Forging billets, P Wire rods, Pittsb	r, at mill 38.0 r, at mill 40.0 sburgh. 90.0 sburgh. 90.0 P'gh. 90.0 ase, P'gh 110.0 ila. 90.0	0 38.00 0 40.00 0 85.00 0 85.00 0 85.00 0 105.00 0 75.00	$\begin{array}{c} 38.00 \\ 40.00 \\ 75.00 \\ 75.00 \\ 77.50 \\ 100.00 \\ 75.00 \\ 85.00 \end{array}$	33.00 35.00 45.00 42.00 42.00 69.00 50.00 60.00	Carwheels, Philadelphia. Heavy steel scrap, P'gh. Heavy steel scrap, Phila. Heavy steel scrap, Ch'go. No. 1 cast, Philadelphia. No. 1 cast, Philadelphia. No. 1 cast, Ch'go (net ton) No. 1 RR. wrot, Phila. No. 1 RR. wrot, Phila.	29,00 29,00 26,00 29,00 26,00 30,00 25,00 42,00 34,00	27.00 29.00 25.00 28.50 26.00 29.00 22.00 41.00 31.00	27.00 28.00 25.00 27.50 24.00 28.00 21.50 39.00 32.00	16.50 16.75 16.00 15.75 16.00 17.50 12.50 22.00 16.00
Finished Iron and	I Steel.				Coke, Connellsville, Per	Net Ton	at Oven :		
Per Lb. to Larg Iron bars, Phila Iron bars, Pittsb Iron bars, Chica	delphia 4.1 urgh 4.6 go 3.5	59 4.159 0 4.00			Furnace coke, prompt Furnace coke, future Foundry coke, prompt Foundry coke, future	9.00	\$8.00 7.50 9.00 9.00	\$7,00 8,00 8,50 9,00	\$2,25 2,50 3,00 3,25
Steel bars, Pittsb Steel bars, New Tank plates, New Tank plates, Pit Tank plates, Pit Beams, etc., Pitt Beams, etc., Nev Skelp, grooved st Skelp, sheared st Steel hoops, Pitt *The average s in the Chicago dist	York. 4.1 ttsburgh. 6.5 v York. 6.5 sburgh. 4.6 v York. 4.6 teel, P'gh 3.5 teel, P'gh 4.5 switching char	69 4.16: 0 6.50: 119 6.91: 10 4.00: 119 4.41: 0 3.50: 10 5.50: 25 4.25: ge for del	6.00 9 6.169 4.00 9 4.169 3.50 5.50 4.25	3,75 3,919 2,60 2,769 2,35 2,45 2,75	Metals,  Per Lb. to Large Buyers Lake copper, New York. Electrolytic copper, N. Y. Spelter, St. Louis. Spelter, New York. Lead, St. Louis. Lead, New York. Tin, New York. Antimony (Asiatic), N. Y. Tin plate, 100-lb, box, P'gh	31.50 31.50 9.25 9.50 10.724 10.874 65.50 25.50	31.50 31.50 9.123 9.373 4 10.37		Cents. 29.00 28.50 14.75 15.00 7.25 7.45 48.00 28.00 85.50

is only one case out of many, and it is evident the mills are holding back shipments on some materials, to apply them on Government contracts when they are placed. The car situation is still unsatisfactory.

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Pig Iron.—There is a fair amount of new inquiry for pig iron for delivery over last quarter of this year and first half of next year. There have been some fairly large sales of No. 2 foundry for delivery the first half of next year, but so far as known, no sales of Bessemer and basic have been closed for delivery beyond second half of this year. A sale is reported of 1000 tons of Bessemer and another of 1500 tons, the latter for delivery in last quarter at \$45 at Valley furnace. lots of Bessemer ranging from 100 tons up to 500 tons have been sold at \$46, or higher, at Valley furnace. We note a sale of 3000 tons of basic, equal deliveries over last half of this year, at \$42 Valley furnace. Also a sale of 500 tons of malleable Bessemer iron at \$43 for last half. Sales of 2500 to 3000 tons of No. 2 foundry have been made for last half of this year delivery at \$43 at Valley furnace, and this price now seems to be minimum of the market, some sellers asking as high as \$45 at furnace. A large eastern steel company has bought 15,000 tons of basic from eastern furnaces at \$42, delivered. We now quote: Standard Bessemer iron, \$45 to \$46; basic, \$42; No. 2 foundry, \$43, for delivery over last half and first half of 1918; gray forge, \$41, and malleable Bessemer, \$43, all f.o.b. cars at Valley furnace. The freight rate for delivery in the Cleveland and Pittsburgh district is 95c. per ton.

Billets and Sheet Bars.—We note a sale of 2000 tons of open hearth sheet bars at \$95, made by a mill in the Cleveland district for delivery in the Pittsburgh district in June and July. It is reported that sheet bars have brought \$100 at mill, but this is not confirmed. Nothing has been done on the heavy inquiry for shell steel noted in this report last week. A sale of 400 tons of discard steel has been made at \$40 per gross ton, maker's mill, and a sale of large ingots at \$65 maker's mill. We now quote soft Bessemer and open hearth billets and sheet

bars at \$90 to \$95 per ton, maker's mill, Pittsburgh or Youngstown. We quote forging billets at \$105 to \$115 per gross ton at maker's mill for ordinary sizes and carbons, the price depending entirely on the quantity and the deliveries wanted by the buyer.

Ferroalloys.—It is possible that within a short time the Council of National Defense will take hold of the ferromanganese situation, and in this event lower prices are expected. The new demand is quiet, consumers evidently believing they will have no trouble in getting deliveries of ferromanganese when needed. A sale of two cars and another of one car are reported at about \$400 delivered, but it is said domestic ferromanganese is being offered for prompt shipment at as low as \$350 per gross ton at maker's furnace. There is a wide range in prices quoted on 50 per cent ferrosilicon, these being from \$150 to \$200 per ton and higher for fairly prompt delivery. It is said the leading producer of ferrosilicon at Niagara Falls, N. Y., is taking care of its trade that is not covered at about the same prices that went into effect late in 1916.

We quote 80 per cent domestic ferromanganese at \$400 to \$425 per gross ton, delivered. The famine in supply of 50 per cent ferrosilicon still exists, and small lots are being sold at \$200 to \$250 delivered. Spiegeleisen continues to sell at about \$4 per point, and we quote 18 to 22 per cent at \$75 to \$80 and 25 to 30 per cent at \$100 to \$110, delivered. We quote 9 per cent Bessemer ferrosilicon at \$64, 10 per cent \$65, 11 per cent \$67, 12 per cent \$70, 13 per cent \$75, 14 per cent \$80, 15 per cent \$85, and 16 per cent \$90. We quote 7 per cent silvery iron at \$46 to \$47: 8 per cent, \$47 to \$48; 9 per cent, \$49 to \$50; 10 per cent, \$50 to \$51, 11 and 12 per cent, \$52 to \$53, all f.o.b. at furnace, Jackson or New Straitsville, Ohio, and Ashland, Ky., these furnaces having uniform freight rates of \$2 per ton for delivery in the Pittsburgh district.

Structural Material.—The new inquiry is more active, and some fairly large jobs have been placed. The McClintic-Marshall Company has taken 2110 tons for an open hearth building for the Crucible Steel Company of America at its Park works in this city; also 1500 tons for additions to various plants of the Aluminum Com-

pany of America and 3500 tons for steel buildings at the Brooklyn Navy Yard, and 330 tons of bridge work for the Philadelphia & Reading Railroad at Trenton, N. J. The American Bridge Company has taken 300 tons of bridge work for the Pennsylvania Railroad, and 350 tons for extensions to open hearth buildings for the Donner Steel Company at Buffalo, N. Y.

We quote beams and channels up to 15 in. at 4c. at mill for fairly prompt delivery, while small lots from warehouse bring up to 5c. and higher, depending upon quantity.

Plates.—Some small orders for steel cars came out in the past week. The Pressed Steel Car Company has taken 12 50-ton steel hoppers for the Mark Mfg. Company, Chicago; 100 steel gondolas for the Youngstown Sheet and Tube Company; 20 steel gondolas, 100,000 lb. capacity, for the Phillips Sheet & Tin Plate Company; 25 tank cars, 8000-gal. capacity, for the Boynton Railway Company, and its Western interest, the Western Steel Car & Foundry Company, has taken 50 all-steel gondolas for the Duluth & Iron Range Railway. The New York Central inquiry for 5000 cars is still pending, but it is not expected any part of the order will be placed here. Russia has been in the market for some time for 10,000 box cars, and while this inquiry is still alive, car builders do not look for it to be placed in the The situation as regards the supply of near future. plates is getting tighter right along, and prices continue to advance rapidly. Ordinary ¼-in. and heavier tank plates readily bring 7c. to 8c. at mill, for delivery in two to four months. It is not believed by plate makers here that the Government will take, when its contracts are finally placed, more than 8 to 10 per cent of the plate mill capacity. Plates for the Government will have preference in delivery over all other contracts. One leading steel car company that has a capacity for building about 130 steel cars per day is getting only enough plates to build 20 to 30 cars per day. This is also true of other users of plates, deliveries being only 25 to 50 per cent of actual needs. Plate mills are now quoting 7c. to 8c. at mill for ordinary tank plates for delivery in four to six months while small lots for prompt shipment have sold at 9c. to 10c. at mill. Ship plates range from 7c. to 9c. and higher, and sheared plates from warehouse bring 10c. to 11c. and higher, depending on quantity.

Steel Rails.—While the official price of 2.75c. on angle bars has not been changed, the local maker is sold up for months ahead, and any mill that can ship out angle bars fairly promptly can readily get as high as 3.50c. at mill. This is also largely true of light rails. The Carnegie Steel Company is sold up late into the next year on both light rails and standard sections. One mill is reported to be quoting \$65 at mill on 25 to 45 lb. Mills rerolling light rails are also booked for months ahead, and often get higher than the price of light rails rolled from billets, when they can make prompt delivery.

Nominal prices, with no promise of delivery, are as follows:

Angle bars at 2.75c. at mill, when sold in connection with orders for standard section rails, and on carload and smaller lots, 3c. to 3.25c. at mill. We quote light rails as follows: 25 to 45 lb., \$60: 16 to 20 lb., \$61: 12 and 14 lb., \$62: 8 and 10 lb., \$63; in carload lots, f.o.b. mill, with usual extras for less than carloads. Standard section rails of Bessemer stock are held at \$38, and open-hearth \$40, per gross ton, Pittsburgh.

Sheets.—We note a continued very heavy demand for all grades of sheets, mills being sold up for several months ahead, and prompt sheets bring high premiums over what are regarded as regular prices. Government purchases have already been heavy, but the bulk of its orders have not yet been placed. No. 28 black sheets are reported to have sold for prompt shipment at 8c. or higher, and galvanized at 9c. and higher, for delivery in three to four months. We quote blue annealed sheets Nos. 3 to 8 gage, 6.50c. to 7c.; one-pass Bessemer, cold rolled No. 28 gage, 7c. to 7.50c.; No. 28 gage galvanized, 8.50c. to 9c.; No. 28 black plate, tin mill sizes, 7c. to 7.50c., all f.o.b. mill, Pittsburgh. For prompt delivery, premiums of from \$5 to \$10 per ton, or more have readily been paid.

Tin Plate.—Tin plate makers are now conserving their entire resources into getting out a maximum output of bright plate for tin can containers for perishable foods. This is going to help the situation very much over the canning season, and the output of bright plate at present, is by far the heaviest ever known in the history of the tin plate trade. Packers of other goods that ordinarily used tin plate state they are going to resort to paper containers and also to glass jars, but prices on glass are almost as high as when tin plate is used. No direct move has been made to operate tin plate mills two turns on Sunday, but this may be tried before long. No attention is being paid to export inquiry. In spite of the fact that export business has been offered to the mills at as high as \$12 per base box, the tin-plate output for 1917 is practically held up, but on small current orders from stock, primes bring \$9 and higher, and wasters 25c. less per box.

We quote long terne plate, No. 28 gage base, at \$7.25 to \$7.50; short terne plate, \$12 to \$12.50, maker's mill, prices depending on quantity and delivery wanted. The present schedule of prices on terne plate is as follows: 8-lb, 200 sheets, \$14 per package; 8-lb, 214 sheets, \$14.30 per package; 12-lb, I. C., \$15.75 per package; 15-lb, I. C., \$15.75 per package; 20-lb, I. C., \$16.50; 25-lb, I. C., \$17.25; 30-lb, I. C., \$18:35-lb, I. C., \$18.75; 40-lb, I. C., \$19.50.

Iron and Steel Bars.—The new demand for both iron and steel bars is still very heavy, and consumers are specifying very freely against contracts. The Carnegie Steel Company is filled up on steel bars over all of this year, and the other local producer for practically the same period. Steel bars are ruling firm at 4c. to 4.25c. at mill. Refined iron bars are also in heavy demand, and prices are ruling firm at the last advance made on May 11. We now quote steel bars at 4c. to 4.25c. for delivery late this year, and 4.50c. to 5c. from warehouse, in small lots, for prompt shipment. We quote refined iron bars at 4c. and railroad test bars at 4.10c. in carloads and larger lots, at mill.

Cold Rolled Strip Steel.—Mills are very much back in deliveries, not yet having cleaned up shipments on contracts for first quarter, and have shipped out very little material so far on second quarter contracts. None of the makers has, as yet, booked orders for third quarter delivery, but the pressure is strong from consumers, and it is likely the contracts for third quarter delivery will be accepted by the makers within a short time. On small current orders, prices range from 7.50c. to 8c., depending on quantity, and for shipment to July 11 contracts for shipment during the current quarter were taken by the mills some time ago at about 7c., at mill

We quote on current orders 7.50c. to 8c. at mill, for delivery to July 1. Terms are 30 days net, less 2 per cent for cash in 10 days, delivered in quantities of 300 lb. or more when specified for at one time.

Wire Nails.—As yet local mills that quoted on the order for the Allies for 240,000 kegs of wire nails of 112 lb. each, have not booked any of this business, and it is not believed any of it has been placed. The new demand for wire nails and wire is very heavy, local mills being sold up for four or five months, and have very little material to spare. In a few cases, small lots of wire nails have sold at \$3.75 base, at mill. The demand for basic wire is reported abnormally heavy, and all the mills are back in deliveries six to eight weeks or longer. The American Steel & Wire Company has not made any change in its prices on wire nails and wire, still taking care of its trade on the basis of \$3.20 for wire nails, and \$3.25 for bright basic wire.

Wire nails, and \$3.25 for bright basic wire.

Wire nails, \$3.50 base per keg; galvanized, 1 in. and longer, including large-head barb roofing nails, taking an advance over this price of \$2, and shorter than 1 in., \$2.50. Bright basic wire is \$3.55 per 100 lb.; annealed fence wire. Nos. 6 to 9, \$3.45; galvanized wire, \$4.15; galvanized barb wire and fence staples, \$4.35; painted barb wire, \$3.65; polished fence staples, \$3.65; cement-coated nails, \$3.40 base, these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 48 per cent all list for carload lots, 47 per cent off for 1000-rod lots, and 45 per cent off for small lots, f. o. b. Pittsburgh.

Wire Rods.—The Government is in the market for 24,000 tons of wire rope for delivery in last half of

this year, and upwards of 25,000 tons of rods will be needed to fill this contract. No wire rope is made in this district, but a large part of the rods needed to make this wire rope will be furnished by local mills, the orders to be placed pro-rata, based on capacity. The new demand for rods continues heavy, and small lots of soft Bessemer rods, for fairly prompt shipment, have sold at \$95 to \$100 per ton. To their regular trade, the mills are furnishing rods at \$85 to \$90 per gross ton, at mill. One leading interest is taking care of its regular customers of soft Bessemer and open hearth chain rods at about \$65 at mill. Sales of high carbon rods, made from special grades of steel, are being made at prices ranging from \$95 to \$115, at mill. No export orders for rods have been taken by local mills for some time, owing to pressure for domestic trade, but shipments are still being made on contracts taken some months ago. The percentage of manganese specified by customers is cutting considerable figure in prices quoted.

We quote soft Bessemer and open-hearth rods to domestic consumers at \$\$5 to \$90; high-carbon rods made from ordinary open-hearth steel, \$90 to \$100, and special steel rods, with carbons running from 0.75 to 0.90, \$100 to \$115 at mill.

Hoops and Bands .- Mills report a very active new demand, and are sold up for three or four months, or longer. One large interest has pretty well covered its trade over the remainder of this year. Prices on hoops range from 4.25c. to 4.50c., and on steel bands from 3.75c. minimum, with no promise of delivery, up to 4c. and 4.25c. at mill, for delivery in four to six months. Extras on bands as per the steel bar card.

Shafting.—Makers report the new demand heavy, and specifications coming in freely. There has been a slight falling off on specifications from the automobile trade, and while as many pleasure cars may not be built while the war lasts, it is expected that this falling off will be more than made up by the trucks that the government will want for war purposes. Specifications from the screw stock machine trade are especially heavy. Consumers are well covered over third quarter, and some for the entire year. Discounts on cold-rolled shafting range from 15 to 50 per cent off list, but the larger discount has practically disappeared, and is given only to regular customers for desirable sizes and in large quantities.

Railroad Spikes and Track Bolts .- Prices on both railroad spikes and track bolts are higner. demand for spikes is fairly active, but for track bolts is very heavy, and one local maker reports being well sold up for the remainder of this year. Large inquiries are in the market for galvanized boat spikes from builders of wooden boats, and the Government has also placed some fairly heavy orders, and is expected to place still larger orders later.

We now quote track bolts with square nuts at ic. to 6.50c. to railroads, and 7c. to 7.50c. in small lots, for fairly prompt shipment. We now quote railroad spikes 9/16 in. and larger at 33.85 to \$4 base, 7/16 in. and ½ in., \$4.10 to \$4.25 base, 5/16 in. and % in., \$4.25 to \$4.50 base. Boat spikes are \$4.25 base, all per 100 ib., f.o.b. Pittsburgh.

Rivets.-Makers report a heavy export and domestic demand, a local concern having shipped lately two carloads of rivets to South America. Large inquiries are now coming in from the trade for rivets for third and fourth-quarter delivery, but as yet none of the local makers is quoting for delivery beyond third quarter. Deliveries of steel by the mills are only fairly

Structural rivets, \$4.75 per 100 lb. base; boiler, \$4.85 per 100 lb. base.

From July 1, 1917, to Oct. 1, 1917, structural rivets, \$4.90 per 100 lb. base; boiler, \$5 per 100 lb. base. F.o.b. Pittsburgh, Pa.

Terms; 30 days net or ½ of 1 per cent for cash in 10 days.

Nuts and Bolts.-Specifications for nuts and bolts from ship builders are very active, and in some cases premiums over regular prices are being paid for fairly prompt shipment. The new demand is heavy, and makers of nuts and bolts, as a rule, are quoting only to regular trade and for specific work. Deliveries of are unsatisfactory, and this, with shortage of labor, is keeping down the output to some extent. The shortage in the supply of cars is also seriously interfering with shipments. An advance in prices on nuts

and bolts is looked for in the very near future. Discounts in effect at this writing are as follows:

Discounts in effect are as follows, delivered in lots of 300 lb. or more, when the actual freight rate does not exceed 20c. per 100 lb., terms 30 days net, or 1 per cent for cash in 10

days:

Carriage bolts, small, rolled thread, 40 per cent; small, cut thread, 35 and 2½ per cent: large, 25 per cent.

Machine bolts, h. p. nuts, small, rolled thread, 40 and 10 per cent; small, cut thread, 40 per cent; large, 30 per cent.

Machine bolts, c. p. c. and t. nuts, small, 30 per cent; large, 20 per cent. Bolt ends, h. p. nuts, 30 per cent; with c. p. nuts, 20 per cent. Lag screws (cone or gimlet point), 45 per cent.

per cent.

Nuts, h. p. sq., blank, \$2.10 off list, and tapped, \$1.90 off; hex., blank, \$1.90 off, and tapped, \$1.70 off; nuts, c. p. c. and t. sq., blank, \$1.70 off, and tapped, \$1.50 off; hex. blank, \$1.60 off, and tapped, \$1.50 off and tapped, \$1.50 off and tapped, \$1.50 off and tapped, \$1.60 off.

Rivets 7/16 in. in diameter and smaller, 40 per cent

Wrought Pipe.-Conditions in the wrought iron and steel pipe trades are the same as noted in this report for months past. Mills are sold up for remainder of this year, and are turning down offered business nearly every day at very profitable prices, being unable to furnish the material and make the deliveries. Oil and gas concerns are sounding the market every day for line pipe, but the mills are refusing to quote. The National Tube Company has not made any change in its official discounts, since those that went into effect on April 2. Discounts on iron and steel pipe, as adopted by the independent mills on May 1, are given on another

Boiler Tubes .- Makers of iron and steel tubes are sold up for a year or more, and the leading interest largely over the first half of 1918. Heavy premiums are paid to any makers of iron and steel tubes who can ship out fairly promptly. Nominal discounts, which do not represent actual market prices, are given on another page.

Coke .- A leading Eastern steel and blast furnace interest closed last week for 10,000 tons per month of high grade blast furnace coke for second half of this year delivery at \$8 per net ton, at oven. This same consumer is reported to be negotiating for 10,000 to 15,000 tons per month, for same delivery. This large contract just closed indicates that producers of high grade blast furnace coke will likely be able to get \$8 per ton for it, which has been their idea of the price for sometime, for last half of the year delivery. There have also been sales of small lots of high grade furnace coke for prompt shipment at \$8 to \$8.50 per net ton, at oven. The coke market is very strong, due to the scarcity in cars, which is delaying shipments to the furnaces to some extent, and also because of the very high prices ruling for pig iron. Coke producers figure that with basic iron firm at \$42, Bessemer \$44 to \$45, and foundry iron about \$42, pig iron makers can well afford to pay \$8 per ton for best grades blast furnace coke for last half delivery. There is fair inquiry for foundry coke, but most consumers are covered for second half of the year, having paid about \$9 per net ton, at oven. We quote best grades of blast furnace for prompt shipment at \$8 to \$8.50, most sellers asking the higher price, and on contracts for last half of this year delivery, \$8 per net ton for best grades, at oven. We quote best grades of 72-hour foundry coke, for prompt delivery at \$9 to \$9.50, and on contract for second half of 1917 delivery at \$9 per net ton at oven. Some grades of furnace and foundry coke are offered at slightly less prices. The Connellsville Courier gives the output of coke for the week ending May 12 as 380,530 tons, a decrease over the previous week of nearly 20,000 tons.

Old Material.—The local scrap market remains quiet as far as sales go, but prices are very firm, and dealers look for a higher market on all grades in the very There is an insistent heavy demand for near future. low phosphorus melting stock, and prices are up about Sales are reported of 500 tons of low \$2 per ton. phosphorus billet and bloom crop ends at \$43, and another sale of 1000 tons at \$45, delivered to buyer's mill in the Pittsburgh district. Select heavy melting scrap is held firm at \$29 to \$30, but some dealers are refusing to sell, believing the market will be much higher. There is a scarcity in supply of No. 1 foundry cast scrap with prices very strong, and likely to be higher. Supply of cars is only fair, and deliveries of scrap to the mills are more or less delayed. Prices for delivery in Pittsburgh and other consuming points that take Pittsburgh freight rates, per gross ton, are nominally as follows:

M TATE TO MA	
Heavy steel melting scrap, Steuben- ville, Follansbee, Brackenridge, Sharon, Monessen, Midland and Pittsburgh, delivered\$29.00 to \$3	0.00
No. 1 foundary part 95 50 to 9	6.00
No. 1 foundry cast 25.50 to 2	0.00
Rerolling rails, Newark and Cam-	
bridge, Ohio, Cumberland, Md., and	
Franklin, Pa 34.00 to 3	5.00
Hydraulic compressed sheet scrap 22.50 to 2	3.00
Bundled sheet scrap, sides and ends,	
f.o.b. consumers' mills, Pittsburgh	
	0.00
Middle to be a second and the second	8.50
remained prince penniphing periopitist	
Atol & state one amount of the state of the	3.00
	7.00
	1.00
Iron car axles 47.00 to	8.00
Steel car axles 50.00 to	2.00
	55.00
	3.00
	5.00
	7.00
	6:00
	37.00
	35.00
Heavy steel axle turnings 19.00 to	00.05
Heavy breakable cast scrap 24.00 to	25.00

<sup>\*</sup>Shipping point.

The offices of Wm. Wieman, pig iron, coal and coke, have been removed from the Frick Building to the Union Arcade Building, Pittsburgh.

## Chicago

CHICAGO, ILL., May 22, 1917.

The situation is but little changed, the period being one of waiting on the part of mill representatives. The leading interest reiterates that it has no plates, shapes or bars to sell, consequently no quotations. It finds specifications a little heavier and shipments somewhat better. All of the mills are straining to the utmost, even to the extent in some cases of keeping all visitors from their plants. It is hoped that by the end of this week something definite will be known as to the war requirements of the Government. Such indirect requirements as come to light are being cared for promptly. Much thought is being given to long-time commitments, as there is the almost impossible problem of how far contracts will be repudiated should present conditions change. Bearing on this question is the extent to which a buyer for far future delivery can be expected to tie up a part of his money; also the ten-dency on the buyer's part to be offended when asked to give some substantial assurance that he will live up to his contract. Prices of steel products are determined largely by the urgency of consumers' needs. Proffered orders for tank plates at 7.50c., Pittsburgh, are being turned away. Sheets are scarcer than ever, and are quoted at 7c. to 7.50c., Pittsburgh, for both No. 10 blue annealed and No. 28 black. Mild steel bars are quoted at 3.75c. to 4c., Pittsburgh. The quotation on Northern foundry iron has advanced to \$45, furnace. Old material has leaped upward under the stimulus given by heavy buying by the Steel Corporation.

Pig Iron.-Northern malleable Bessemer, basic and No. 2 foundry, are now quoted at \$45, furnace, for last half delivery and at \$43, furnace, for the first half of The week has been fairly active, though there is not the rush to buy that existed a few weeks ago. Much of the buying has been done quietly, with the jobbing foundries more in the market than they have been heretofore. Some good-sized inquiries are pending, from the stove manufacturers in particular. One interest took orders for over 12,000 tons of Southern iron in the week, made up of various lots, none of which was over 1200 tons, and all for first half delivery. Prices were on the basis of \$36, Birmingham, for iron running 2.25 per cent and over in silicon. While this interest has no iron to sell for delivery this year, another seller has handled a few consignments for last half delivery at \$38 to \$40, Birmingham, the lower price being for iron low in sili-

As a rule, \$40, Birmingham, is the asking price for No. 2. It is predicted that first half Southern from will go to \$38, Birmingham, before the end of this week While business has been done at \$36, Birmingham, for next year, the representative of one maker has accepted \$35, the same interest stating that none of his Southern principals will accept orders for next year involving iron other than that running 1.75 per cent and over silicon. The makers of Ohio silveries are entirely out of the market because of strike troubles, but Tennessee silvery, 7 per cent silicon, is quoted at \$49, furnace, or \$51.75, Chicago; 8 per cent is about \$1 higher. A maker of charcoal iron who has been quoting around \$50, furnace, or \$51.75, Chicago, exact prices depending on negotiations, is understood to be now out of the market for delivery this year, but is quoting \$46.75 to \$48.25 for first half. Another maker quoted \$46.75 to \$48.25. on May 4, for the last half, and since that date has reported weekly no change in those prices, though under date of May 18 it is stated that the tonnage available for sale to July 1, 1918, is pretty well disposed of. It therefore is doubtful just where the market stands for delivery this year. The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malleable Bessemer and basic irons, which are f.o.b. furnace, and do not include a switching charge averaging 50c. per ton:

Lake Superior charcoal, Nos. 1 to 5 \$50	25
Lake Superior charcoal, No. 6 and Scotch 51	.75
	.50
Northern coke foundry, No. 2 45	.00
Northern coke foundry, No. 3 44	.50
Northern high-phosphorus foundry 45	.00
Southern coke No. 1 f'dry and 1 soft 44	.50
	.00
Malleable Bessemer 45	
Basic 45	.00
Low-phosphorus 80	00.6
	1.75
Bessemer ferrosilicon, 10 per cent 70	1.50

Ferroalloys .- No change is reported in 80 per cent ferromanganese, quotations for prompt ranging from \$425 to \$450 per ton, with late 1917 delivery at \$400. Bessemer ferrosilicon, 10 per cent, is around \$70.54.

Structural Material.—The leading interest has no shapes to sell and no price to quote. Other important makers also say they are practically out of the market; but on such small lots as it can supply, one quotes 4.75c., Pittsburgh, or 4.939c., Chicago. All bids on a coliseum building at Fort Wayne, Ind., which would have required 1000 tons, were rejected by the Board of Works for the reason that the lowest bid was in excess of the money available. The following awards are reported:

Unloader and ore-handling bridge for the Ford Motor Company, Detroit, Mich., placed by the Mead-Morrison Mig Company, to unnamed fabricator: 755 tons.

Miscellaneous bridge work at various locations for the re-ceivers of the Texas & Pacific Railroad Company, understood to have gone to the Virginia Bridge & Iron Company: 278 tons.

Rio Vista bridge for Sacramento and Solona Counties, California, to the American Bridge Company: 298 tons.

We quote for Chicago delivery of structural steel out of jobbers' stocks, 5c.

Rails and Track Supplies .- No activity is reported, and the only change in prices to be noted is an advance of 1/2 c. in angle splice bars, these now being quoted at 3.25c. base instead of 2.75c.

Quotations are as follows: Standard railroad spikes, 4c to 4.10c., base; small spikes, 4.25c. to 4.35c., base; track bolts with square nuts, 5c. to 5.10c., all in carloads, Chicago; the plates, \$60 to \$70, f.o.b. mill, net ton; standard section Bessemer rails, Chicago, \$38, base; open hearth, \$40; light rails, 25 to 45 lb., \$60; 16 to 20 lb., \$61; 12 lb., \$62; 8 lb. \$63; angle bars, 3.25c., base.

Plates.-While the principal producer asserts that it has no plates to offer and no quotation to make, conservative independent mills have no difficulty in getting business in tank plates to the extent that they care for it at 7.689c., Chicago, and one states that 7.689c. to 8.189c. covers the market, delivery this year. Buyers are eager to place orders at the bottom of the range if they can have delivery in three to four months, but inability to make this delivery has caused the turning down of many orders. Ship plates for 1917 delivery are quoted at 9.689c., Chicago, and business proffered at this level for first quarter delivery has been declined. Despite all this, occasional instances are cited where

consumers bought small quantities at much below the prices referred to, and the jobbers have not advanced their quotations.

W. quote for Chicago delivery of plates out of jobbers'

Sheets .- Frequent complaints are heard from consumers who want sheets, and cannot get them, even at premium prices. No. 10 blue annealed and No. 28 black sheets are each quoted at 7.189c. to 7.689c. by a prominent maker. No. 28 galvanized range from 9.689c. to 10.189c., Chicago. Jobbers have advanced their quotation for blue annealed out of store ½c.

We quote for Chicago delivery out of stock, regardless of quantity, as follows: No. 10 blue annealed, 7.50c.; No. 28 black, 7.50c., and No. 28 galvanized, 9.50c.

Rivets and Bolts.-Specifications are being filed actively, and new business is more than sufficient. No changes in prices have been made.

Mill quotations are without change, as follows: Carriage balls up to \( \frac{3}{5} \) x \( 6 \) in., rolled thread, \( 40 \); cut thread, \( 35-2 \) \( \frac{1}{2} \) inger sizes, \( 25 \); machine boits up to \( \frac{3}{5} \) x \( 4 \) in., rolled thread, with hot-pressed square nuts, \( 40-10 \); cut thread, \( 40 \); large size, \( 30 \); gimlet-point coach screws, \( 45 \); hot-pressed nuts, square, \( \frac{8}{2} \) 10 off per 100 lb.; hexagon, \( \frac{9}{2} \) 1.90 off. Structural rivets, \( \frac{3}{2} \) to 1\( \frac{1}{2} \) in., \( 4.75 \)c. to 4.939c., base, Chicago, in carload lots; boiler rivets, \( 10 \); and \( 10 \); allocs in the sizes, \( 3.5 \); carriage bolts up to \( \frac{3}{2} \) x \( 4 \) in., \( 40-10 \); larger sizes, \( 3.5 \); carriage bolts up to \( \frac{3}{2} \) x \( 4 \) in., \( 40-10 \); larger sizes, \( 3.5 \); hot-pressed nuts, square, \( \frac{3}{2} \), and hexagon \( \frac{3}{2} \) off per 100 lb.; lag screws, \( 50 \) per cent off.

Bars.—For delivery this year a large local mill quotes mild steel bars at 3.939c. to 4.189c., Chicago, meanwhile stating that 3.689c. might be accepted for next year. Another mill which has not opened its books for next year quotes a minimum of 4.189c., Chicago, on such sizes as it finds it convenient to roll. It has sold spring steel on the basis of 4.35c., Pittsburgh. Hard steel bars range from 3.50c. to 3.75c., Chicago, but the market for them has not opened up as well as was expected because of the curtailment of building. Meanwhile old steel rails continue to advance in price. Common iron bars are strong at 3.50c., Chicago.

We quote prices out of store for Chicago delivery as follows: Soft steel bars, 4.50c.; bar iron, 4c.; reinforcing bars, L50c, base, with 5c, extra for twisting in sizes  $\frac{1}{2}$  in, and over and usual card extras for smaller sizes; shafting list plus 5 per cent to plus 10 per cent.

Cast-Iron Pipe.-Milwaukee, Wis., placed 225 tons one week ago, which went to the Hammond-Byrd Iron Company, Chicago. No other lettings of importance

Quotations are unchanged as follows per net ton, Chicago: Water pipe, 4 in., \$58.50; 6 in, and larger, \$55.50, with \$1 extra for class A water pipe and gas pipe.

Wire Products.-The leading interest adheres to its price based on \$3.20 per keg for wire nails, and has taken care of some of its regular customers on this basis, but in common with other subsidiaries of the steel corporation is taking but little new business. Specifications were a trifle lighter in the past week. To jobbers it quotes as follows per 100 lb. (other makers being 30c. higher):

Plain fence wire, Nos. 6 to 9, base, \$3.339; wire nails, \$3.539; painted barb wire, \$3.539; galvanized barb wire, \$4.232; polished staples, \$3.539; galvanized staples, \$4.239, all Chicago, carload lots.

Old Material.—Price advances have been so radical that even the sellers have been made uneasy. With prices ascending at an almost unprecedented rate, nearly all interests are more or less at sea as to where they really stand. All assert that available material is rapidly being absorbed and that a shortage is almost inevitable. Carwheels have been purchased at \$30, and stove plate at \$17.50. The leading steel maker has been purchasing nearly all grades, including carwheels, busheling, and cast scrap. It has taken at least 40,000 tons, according to report, and is said to be seeking more to be applied against its needs of next winter. The Rock Island has issued a list amounting to several thousand tons, the Michigan Central has issued an average list, and the C. & A. a small one. In the offerings steel rails and railroad wrought are the large items. We quote for delivery at buyers' works, Chicago and vicinity, all freight and transfer charges paid, as follows:

	Per	Gross	Ton		
Old iron rails				\$34.50 to	\$35.00
Relaying rails				39.00 to	40.00
Old carwheels				30.00 to	30,50
Old steel rails,					
Old steel rails,					
Heavy melting					
Frogs, switches	s and gu	iards, c	ut apart	29.00 to	30,00
Shoveling stee					
Steel avle turn	siner:			19.50 to	20.00

#### Per Net Ton

Year angles and collection to the		227.00
Iron angles and splice bars	35.30 10	\$37.00
Iron arch bars and transoms		
Steel angle bars	28.50 to	
Iron car axles	43,50 to	
Steel car axles	42.50 to	
No. 1 railroad wrought	34.00 to	35.00
No. 2 railroad wrought	31.00 to	32.00
Cut forge	31.50 to	32.00
Pipes and flues	19.75 to	20.75
No. 1 busheling	23.50 to	
No. 2 busheling	16.50 to	
Steel knuckles and couplers		
	32.50 to	
Steel springs		
No. 1 boilers, cut to sheets and rings.	19.00 to	
Boiler punchings	26.00 to	
Locomotive tires, smooth	38.00 to	
Machine-shop turnings	12.50 to	
Cast borings	12,50 to	
No. 1 cast scrap	25,00 to	26.00
Stove plate and light cast scrap	17.50 to	18,00
Grate bars	16,00 to	
Brake shoes	16,00 to	
Railroad malleable	24.50 to	
Agricultural malleable	20.50 to	
PARTICULAR III III III III III III III III III I	20,00 10	m 4 . 17 17

## Cincinnati

CINCINNATI, OHIO, May 22, 1917.

Pig Iron.—The inquiry is rather light, and sales have fallen off the past week. Two central Ohio firms want 500 tons each of Southern foundry iron for firsthalf shipment, and an Indiana melter is in the market for 600 tons of charcoal iron. A few 500-ton lots of Southern iron have been sold in Ohio, Indiana and Michigan, but most business booked now is for smaller tonnages to be shipped this year. Prices are stronger, but no changes have been made. Southern iron for prompt shipment is held at \$40 Birmingham basis, and for next year from \$38 to \$40, although there is yet some \$36 iron to be had. It is also reported that contracts could be made for last-quarter movement with shipments extending into 1918 around the minimum first-half price.

Northern iron is firm at \$43 Ironton for this year. Although sales have been made at this figure, furnaces are loath to take on much further business for this year's movement. The quotation for first-half shipment is \$42 Ironton, and lately this price has been adhered to. Both basic and malleable are quoted on the same basis, but no sales of consequence are reported. The Ohio silvery iron situation bids fair to become more acute, as three furnaces in Jackson County are still shut down on account of labor troubles. There are now rumors of a settlement in sight. Based on an 8 per cent analysis, \$50 furnace is the best price for first-half shipment. There is none of this iron to be had for this year, except a few small scattered lots that have been offered for immediate shipment at \$49 in order to clear it out of the way.

Finished Material.—No changes in warehouse prices are to be noted, but there is a tendency to advance wire nails from \$3.90 per keg base to \$4, and it is predicted that the latter figure will rule as the average store price before the week has passed. Barb wire is un-changed at \$4.95 per 100 lb. Prices on sheets are hardening, but no changes are reported. No. 28 galvanized sheets are quoted at 9.65c. Cincinnati, or Newport, Ky., and No. 28 black at 7.65c. The warehouse price on No. 10 blue annealed sheets remains at 7.50c. Plates and shapes are hard to get, and orders for reinforcing concrete bars are coming in faster than they can be taken care of.

We quote store prices as follows: Steel bars, 4.65c.; twisted steel bars, 4.70c.; structural shapes, 5c.; 1/4-in. plates and heavier, 7c.; machine bolts, % x 4 in., and smaller, 50 per cent discount, larger and longer, 30 and 10 per cent discount; files, 50 and 10 per cent discount, and hack saws 10 per cent discount.

Coke .- Contract foundry coke is quoted at various prices, and there does not seem to be any set average prices in all of the producing districts. Connellsville 72-hr. coke for future shipment ranges from \$8 to \$9 per net ton at oven, but prompt coke has brought as high as \$10.50. Wise County and Pocahontas contract quotations are about on the same level, but some prompt foundry coke in those fields lately brought \$11 per net ton at oven. Furnace coke is inactive, and ranges from \$7.75 to \$8 per net ton at oven in the Connellsville field. There is very little to be had in either the Wise County or Pocahontas fields. The car situation is causing a great deal of inconvenience, but locally it has not adversely affected any plants to any extent.

Old Material.—Prices have been advanced again, and both wrought and cast scrap material are in better demand. The supply is lighter and shipments are going forward at a rapid clip, although the scarcity of cars is causing some delay in a number of cases. Both cast borings and turnings are in better demand than they have been for some time, but they still stand at the bottom of the price list. The following are dealers' prices f.o.b. at yards Cincinnati and southern Ohio:

1.7	(3.65	63×	088	17	23.33

Bundled Sheet Scrap	DO:	919.60
Old iron rails 26.75	to	27.75
Relaying rails, 50 lb. and up 31.25	to	31.75
Rerolling steel rails 30.75	to	
Heavy melting steel rails 24.25	to	24.75
Steel rails for melting 23.25	to	23.75
Old carwheels 23,25	to	23.75
Per Net Ton		
No. 1 railroad wrought\$26.25	to	\$26.75
Cast borings 8.75	to	9.25
Steel turnings 8.75	to	9.25
Railroad cast	to	20.75
No. 1 machinery cast 20.75	to	21.75
Burnt scrap 12.25	to	12.75
Iron axles 34.25		
Locomotive tires (smooth inside) 34.75		
Pipes and flues 15.25		
Malleable cast 17.25		
Railroad tank and sheet 15.75		

## Philadelphia

PHILADELPHIA, PA., May 22, 1917.

The week was featured by great pressure on the part of buyers of steel plates to cover their requirements. The policy of most mills in declining to consider contracts to be specified after July 1 has resulted in some of the largest buyers requesting space at any price to be fixed by the mill later on. Independents have not announced an official advance over the minimum of 7½c. base for tank, but some important business has been done at 81/2c. base Pittsburgh for tank steel, shipment at mill's convenience, and current quotations appear to be around a minimum of 8c. base Inquiries involving large tonnages are being daily turned down without quoting. The case of one Eastern mill which is holding three months' space for Government work, and turned down several thousand tons at 8c. last week, is typical. Pittsburgh consumers have offered to pay fancy prices to get large tonnages on the books of Eastern mills, but as far as could be learned none was tempted to accept work which in normal times would go to Pittsburgh makers. Government requirements continue to be indicated, generally in an indefinite way, with specifications held up for the present. One instance is reported of 1000 tons of hull plates being specified to a large independent plate mill for a contract which is said to be for sub-

Pig Iron.—The pig-iron market is strong, and mostly sold up, only scattering lots being sold for early delivery. No large tonnages are available for the next few months, according to representative sellers. The demand for foundry grades is steady, though not to be described as heavy for either spot or future deliveries. One inquiry involving 10,000 tons of eastern Pennsylvania iron for first half is in the market, and will probably be acted upon promptly, while another for 5000 tons has not been decided. Prices reflect something of an upward tendency, but there were no sensational advances during the week. Sales have mostly involved small lots, and \$44.50 delivered, which was done on several hundred tons of No. 2 X for prompt shipment, represents the average market. One agency recorts a sale of a fair tonnage of No. 2 X iron for

prompt delivery on a basis of \$44.50 furnace. This same seller placed a carlot or pape and delivered. Little Virginia iron is being offered, and delivered. The Virginia sales during the week were negligible. The Virginia Iron, Coal & Coke Company and Pulaski are still out of the market. In one case \$40 furnace was done on 150 tons of No. 2X Virginia iron for the first half, the same interest obtaining \$45 furnace for a small prompt The market for Alabama iron is around tonnage. \$38 for last quarter of this year, but virtually no business is reported. A 50-ton lot was sold at \$39 furnace. Between 12,000 and 15,000 tons of basic pig iron were sold to an eastern Pennsylvania steel works at \$42 delivered, an advance of \$2 a ton over previous ruling quo-For standard low phosphorus iron \$78 appears to be the usual quotation for spot. One sale is noted of approximately 10,000 tons for deliveries over the remainder of the year at this figure, while as high as \$80 is said to have been done on a small tonnage for quick shipment. Some important though not very heavy inquiry for low phosphorus for export is reported. Most agencies have nothing to sell for the remainder of this year. Quotations for standard brands, delivered in buyers' yards, for prompt shipment, range about as follows:

Eastern Pa. No. 2 X foundry \$44.00 to	\$45.00
Eastern Pa. No. 2 plain 43.50 to	44.50
Virginia No. 2 X foundry 44,00 to	45.00
Virginia No. 2 plain 43.50 to	
Gray forge 39.75 to	
Basic,	
Standard low-phosphorus 78.00 to	80.00

Ferroalloys.—Buyers of ferromanganese are anxious about future supplies, and the outlook is not considered very satisfactory. There has been large inquiry in this market, but no sales of consequence are reported. The fact that licenses have been allowed by the British Government in the case of a few mills which are not actually engaged on munitions work for the Allies is having no real influence on the situation, as the tonnage involved is comparatively small. Usual quotations on domestic ferromanganese continue at about \$450 for prompt shipment, with \$400 as the nominal minimum.

Structural Material.-Schedules of the independent mills are full for a year ahead, and business is being turned away in wholesale fashion. Nominally 41/2c. is the minimum quotation on standard shapes, with shipment at mill's convenience. As high as 51/2c. has been done on certain special orders, which the mill found it could handle, but such instances are isolated, and generally buyers are informed that specifications cannot be considered at any price, as congestion is too great to allow of figuring deliveries. Large jobs are conspicuous by their absence from to-day's market. The Government is taking bids for some Panama Canal work, which will require about 700 tons of miscellaneous rollings, and it is reported that L. F. Shoemaker & Co. have received the contract for the Hershey Chocolate Company's addition, involving between 1200 and 1600 tons of steel.

Billets.—Large inquiry is reported for billets, but the mills generally have little to sell. One mill has advanced its price to \$115 a ton on forging billets, and it is reported that upward of 2000 tons were sold at the advance. On soft rerolling billets, the market has stiffened materially, and \$90 to \$95 are the usual quotations.

Sheets.—The mills are said to be mostly oversold for the remainder of the year, and surely over the third quarter. The usual quotations for No. 10 blue annealed are now 7½c. to 8c.

Iron and Steel Bars.—The minimum price for steel bars is still 4c., Pittsburgh, and buyers are showing a great deal of interest in quotations for third quarter, though no contracts are noted as yet. Strong demand for bar iron has been shown in this market, but being doubtful about the future, mills are taking orders for prompt shipment only on a basis of 4.159c. on carloads f.o.b. Philadelphia.

Coke.—The coke situation is about as it has been, with from \$8 to \$8.50 being done for spot furnace fuel at the ovens. For foundry coke, \$10 fairly represents the spot market.

Old Material.—A general marking up has been effected in the list of iron and steel scrap, advances of \$1 to \$2 a ton being predicted on the growing demand and increasing scarcity of pig iron substitutes. This market may be said to be strong, but featureless at this writing, with a marked tendency toward much higher prices in view of the fact that supplies are fast being absorbed at present levels. Quotations covering eastern Pennsylvania and taking freight rates from 50c. to \$1.50 per gross ton, are about as follows:

No. 1 heavy melting steel\$26.00 to	\$27.00
and steel rails, rerolling 34.00 to	35.00
Low phosphorus heavy melting steel	
TAP 40.00 to	42.00
Old iron and steel axles (for export) 47.00 to	48.00
old  ron rails 35.00 to	36.00
arwheels	30.00
No 1 railroad wrought 42,00 to	44.00
No. 1 forge fire 19.00 to	19.50
Bundled sheets 19.00 to	19.50
No. 2 bushelings	16.50
Machine shop turnings 16.00 to	16.50
Cast borings 16.00 to	
No. 1 cast 30.00 to	
Grate bars, railroad	
Grate pars, ramroad	19.50
Stove plate 19.00 to	
Railroad malleable 29.00 to	30.00

## Birmingham

BIRMINGHAM, ALA., May 22, 1917.

Pig Iron.—Spot, \$40; last half, with special reference to last quarter, \$38; first half of 1918, \$36. This is just about the schedule of the Birmingham iron market so far as the producers are concerned. Actual business is done on these figures. The leading interest announces a schedule of \$38 for 1918 delivery, but up to Saturday last it had the following of only one other small company, hence that price is not yet the 1918 level. Two of the largest foundry producers were still on a schedule of \$36 for 1918. In fact, during the week a proffer of 1000 tons for 1918 on a basis of \$36 was beaten by another interest which, as a rule, was quoting higher. Spot sales were made by furnace interests at from \$38 to \$40, the latter prevailing. leading interest is understood to be practically out of the market so far as the remainder of 1917 is concerned, just as the Alabama company is. The Woodward Iron Company is also reported as well sold up for the rest of this year. The leading foundry interest has not altered its price list of \$40 for last half and \$36 for 1918. The Alabama Company has very little of its special high silicon iron, but is understood to have sold some regular Etowah for 1918 at \$38. There is no special regularity in prices owing to the different condition of the makers and consumers, preferred and regular customers getting quotations lower by as much as \$1 and \$2 per ton. The Sloss-Sheffield Company now has six stacks in operation, and its 300 city coke ovens are furnishing an additional coke supply, easing its operations. The foundry purchases continue very large, however. One of the foundry iron producers with three active stacks sold around 30,000 tons during the month. Production is increasing steadily. month will mark a new high record in all probability. Labor employers have about come to the conclusion that nothing but higher wages will stop the negro exodus. The labor question becomes more and more acute. We quote per gross ton, f.o.b. Birmingham district furnaces for nearby delivery as follows:

		2	
No. 1 foundry a	and soft		 \$39.50 to \$40.50
No. 2 foundry a	and soft		 39.00 to 40.00
NO. 4 TOURSEY			38 50 to 39 50
No. 4 Ioundry			38.25 to 39.25
Miai lorge			28 00 to 39 00
Basic			39.00 to 40.00
Charcoal			 44.00 to 45.00
			 41.00 10 40.00

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Cast Iron Pipe.—Lettings of new contracts have dropped, one plant having received but two small orders recently. Several pits in each of the leading interest's shop are down, although the big Argentine order and recent government contracts keep them up to 75 per cent of production. Municipalities cannot see their way to order pipe at present prices. We quote per net ton, f.o.b. pipe shop yards, as follows: 4-in., \$53; 6-in. and upwards, \$50, with \$1 added for gas pipe and extra lengths.

Coal and Coke.—Coal is now selling even to railtoads at \$2 per ton against former rates of \$1.10.

Blacksmithing brings \$6 and milling steam coal from \$2.50 to \$3.50. Coke dealers manage to deliver as per contract to nearby points, but it is difficult to fill Texas, Pacific coast and other far-off specifications on account of car shortage. Spot foundry remains around \$14, and contract coke at \$12.50, with furnace coke at \$6 to \$8, according to conditions.

Bars.—Steel bars, f.o.b. Birmingham, car lots, 3.75c. to 4.00c.; iron bars, 3.50c. to 3.75c.

Old Material.—Owing to large stocks on consumers' yards and conditions which are rather inexplicable, the scrap market was not as strong during the past week. However, weakness did not develop to the extent predicted. The net decrease amounted to a return to prices prevailing two weeks ago. We quote per gross ton; f.o.b. pipe dealers yards as follows:

Old etc	of owl	~										.\$35.00 to \$36.00
Our are	el axi	es .						0	 			. \$35.00 to \$35.00
Old ste	el rai	ls .										. 20.50 to 21.50
No. 1	Wroug	ht .										. 22.50 to 23.00
No. 1 h	leavy	mel	ting	g: 1	ste	ee	1.		 			. 17.50 to 18.00
No. 1 r	nachii	nery	G8	125								. 19.50 to 20.50
Carwhe	els .							4				. 17.50 to 18.50
Tram o	arwh	eels										. 16.00 to 16.50
Stove 1	plate :	and	lig	ht								. 14.50 to 15.00
Tuenin	One2		-									0.95 40 0.75

## New York

New York, May 23, 1917.

Pig Iron.-Several buyers of importance are in the market for round tonnages. Inquiries were sent out in a very quiet way in the evident desire not to excite the market, which is already on a very high level of prices. The American Locomotive Company is inquiring for 8500 tons of No. 2 plain foundry and 1500 tons of basic for delivery the first half of 1918, half of the tonnage for Dunkirk and half for Schenectady. other large buyers whose names are not revealed are in the market for 7500 tons and 5000 tons respectively of foundry grades, both for delivery in 1918, the 5000 tons extending into the late part of the year. It is evident that some of the large melters are melting more iron than they expected to use or are unable to obtain deliveries. This fact is a strong feature of the present situation. A New Jersey foundry, which was in the market for 1000 tons of foundry iron, reduced its inquiry to 600 tons and purchased that amount, delivery the first half of next year. There is fair in-quiry for iron for export, including a moderate tonnage of Bessemer, and some iron specified to analyze 0.07 phosphorus. In the Buffalo market, \$45 seems to be the minimum for any kind of iron for this year, while for 1918 delivery there is a wide range of quotations, being from \$40 to \$44, and sales not numerous. The shortage of coke and cars in the Buffalo district We quote at tidewater for early delivery is serious.

No. 2 X	43.7	5 to 44.25
No. 2 plain .	43.2	5 to 43.75
Southern No.	foundry	44.75
	foundry and soft	

Ferroalloys .- A fairly large lot of domestic ferro manganese for delivery before July 1 was sold in the past week for \$450, delivered, and sales have also been made for delivery in the last quarter at \$400, deliv-These prices may be taken as representing the market, but lower quotations are heard of, one dealer naming \$350 for delivery in the last half. Inquiries have appeared for several lots of 200 to 400 tons each in the past week, but few sales are reported. market is quieter than in the past two or three weeks and there is less anxiety in regard to supplies. Aside from the generally accepted statement that the production of ferromanganese in this country will show an increase shortly, receipts from abroad thus far in May are reported as quite satisfactory, and it also develops that the imports of the British alloy in April were much larger than it was thought a week or so ago. According to official returns furnished THE IRON Age, the April imports will exceed 6800 tons, making that month the largest so far this year, and bringing the total for the first four months to over 24,000 tons.

The spiegeleisen market is very strong and cales of 3000 to 4000 tons are reported as having been made in the past week for delivery in the last half and first quarter, with inquiries fairly active. The quotation for the 20 per cent grade for delivery this year is \$80 to \$85, furnace. There has been some inquiry for delivery next year. The ferrosilicon market, 50 per cent, is unchanged at \$200 to \$250 delivered, depending on conditions, but it is reported that these prices are likely to be lower for much of the future business that will come up.

Finished Iron and Steel.-The probable needs of the Government for both plates and structural material tend to retard the acceptance of new orders by large producers, aside from the fact that most of them are booked well into the future. The uncertainty as to what the Government will need has not been cleared up, though several additional contracts have been let by the Shipping Board. The market for structural material is less active than in many weeks. Very little of the 17,000 or 18,000 tons which has been up for bids in the past two or three weeks has resulted in any definite orders, and it would not be surprising if 50 per cent of this was not heard of again. About 6000 tons of the total represents Government needs, and these will of course ultimately result in definite orders. Current buying by railroads is limited to material absolutely needed for bridges and general repairs, and it is a fair estimate that probably 2000 tons will cover such wants now before the market. No new projects are reported as coming up for bids in the last week and new awards have been few. The 300 tons for a cab shop at Altoona for the Pennsylvania Railroad has gone to Lewis F. Shoemaker & Co., and it is understood that 500 tons for a shop building for the General Electric Company at Schenectady has been taken by the Blaw Structural Steel Company, Hoboken. market for steel plates is quiet. One large Eastern mill has withdrawn completely from the market for any delivery before July 1 and refuses to consider anything except the most urgent business. It is from three to four weeks behind on deliveries. Another mill has recently received an offer on a fair sized lot of plates for delivery in the Orient in the third quarter at 91/4c. per pound at mill. There has been more interest in the car market in the past week. The Pressed Steel Car Company has taken 12 hoppers for the Mark Mfg. Company, while the American Car & Foundry Company will furnish 1000 gondolas to the Topeka & Santa Fe, and the Haskell & Barker Company 500 refrigerator cars to the Illinois The Canadian Government Railways has bought 1000 box cars from the Canadian Car & Foundry Company and 1000 also from the Eastern Car Company. An interesting statement is that Russia will probably place in this market orders for 10,000 to 30,000 freight cars of about 40,000 lb. capacity each. This business has long been talked of but financing has been the obstacle. In this particular the situation has been improved by the loan of the Government arranged in the past week, which is considered but a forerunner. In the bar market the inability of mills to make full deliveries is emphasized by the appearance of inquiries from consumers who have not heretofore dealt with mills to which they are now applying. We quote plain material from mill at 4.419c. to 4.919c., York, the lower price in three to four months and the higher for small lots in earlier deliveries. For future shipments, 4.169c. seems to be the minimum. Shipments from warehouses are 5c. per pound, New York. On mill shipments of universal and tank plates the range is 6.919c. to 7.669c., New York, with little available before the last quarter, and ship plates are 8.169c. and higher, New York. Plates out of store are 7.50c., New York. We quote steel bars at 4.169c. to 4.669c., New York, and iron bars at 4.169c., New York. From New York district warehouses iron bars are sold at 4.60c. and steel bars at 4.75c.

Cast Iron Pipe.—The absence of municipalities in the cast iron pipe market is still very marked, but private buying has continued and shops are busy. Carload lots of 6-in. class B and heavier are now quoted at \$55.50 per net ton, tidewater, with class A and gas pipe taking an extra of \$1 per ton.

Old Material.—The scrap market is fairly active and although there are not many changes in prices, several grades have been marked up from 50c. to \$1. Wrought iron track scrap reflects the unusual demand for wrought iron material and is now about \$2 higher than recent quotations. Much interest is felt among New York dealers in the recent meeting at Pittsburgh, and it is hoped that it will result in the Government giving more consideration to the scrap business. Coatesville is completely embargoed. Brokers quote buying prices as follows to local dealers and producers, per gross ton, New York:

Heavy melting steel scrap (for ship- ment to eastern Pennsylvania) 23.00 to	22.50
Old steel rails (short lengths) or	
equivalent heavy steel scrap 24.50 to	25 00
Relaying rails 44.00 to	45.00
Rerolling rails 35,00 to	35.50
Iron and steel car axles, 46.00 to	47.50
No. 1 railroad wrought 40,50 to	41.50
Wrought-iron track scrap 36.00 to	37.00
No. 1 yard wrought, long 33.50 to	34.00
Light iron 7.50 to	8.00
Cast borings (clean)	14,00
Machine-shop turnings 12.50 to	13.00
Mixed borings and turnings 12.25 to	12.75
Wrought-iron pipe (not galvanized or	
enameled) 21.00 to	22.00

Machinery cast continues in good demand, but prices have not advanced. Malleable railroad cast has advanced \$1. Dealers in New York City and Brooklyn are quoting as follows to local foundries, per gross ton:

No. 1 machinery cast		\$39.00
No. 1 heavy cast (column, building material, etc.)	26.00 to	26.50
No. 2 cast (radiators, cast boilers,		
etc.)	22,00 to	23.00
Stove plate	17.50 to	18.00
Locomotive grate bars	17.50 to	18.00
Old carwheels	27.00 to	28.00
Malleable cast (railroad)	24 00 to	24.50

## St. Louis

St. Louis, Mo., May 21, 1917.

Pig Iron.—The demand for pig iron seemingly has been shut off by the high prices and the conditions placed on purchases by the furnaces, and about the only buyers now appearing in the market are small consumers, and these only as they have actually sold ahead on the material which they seek. The aggregate of sales for the week probably did not exceed 2500 tons. Most of this was No. 2 Southern, which is quoted at about \$40 per ton, Birmingham, for this year, with the exception of one interest which is making sales at about \$36 to \$37, Birmingham for No. 2 Southern for last-quarter delivery, provided a considerably heavier tonnage for 1918 delivery is contracted for at the same time. One sale of basic, of which mention was made last week, was closed during the past week, the total being about 4000 tons, but the price was withheld. This went to the local furnace for foreign delivery. High silicon irons are out of the market, and the same is true of Lake Superior charcoal and of ferromanganese.

Coke.—The demand is not so active as in recent weeks, and the price has been marked up for best selected 72-hr. foundry coke to \$10.25 to \$10.50 for future delivery, and \$12 for spot. By-product coke is not being offered, as the nearby ovens and the local plant are well sold ahead.

Finished Iron and Steel.—Little new business has appeared, the chief difficulty being to keep customers satisfied with the deliveries on the material already contracted for. Deliveries now are, for the most part, eight months to 12 months ahead, and in consequence consumers are going to the warehouses very freely for their needs and paying the prices asked without demur. For stock out of warehouse we quote as follows: Soft steel bars, 4.55c.; iron bars, 4.50c.; structural material, 5.05c.; tank plates, 6.55c.; No. 10 blue annealed sheets, 7.55c.; No. 28 black sheets, one pass, cold rolled, 7.85c.; No. 28 galvanized sheets, black sheet gage, 10c.

Old Material.—An excited condition has existed in the scrap market during the week as a result of heavy

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purchases at other points and to some extent here by outside interests, including the Steel Corporation and the Inland Steel Company, the last named being credited with having taken 75,000 tons of all classes and grades, while the former has made exceptional purchases, with prices somewhat disregarded when material was to be found. In consequence, prices are stiffer, although local buyers have not entered into the scramble for material. The outside call for material so overshadowed the market here that little attention has been paid to near-by consumers for the moment. Dealers are beginning to cover their short sales freely, and this is causing more excitement in the market to the extent that in some cases premiums are being paid to get material wanted at once. The railroads are letting go of old material to any extent, and it believed that they have little available. The labor situation is also acute because of the shortage of labor, and the shipping conditions, on account of traffic congestion, are not helping the market any. Prices given are largely estimates of values, as sales are being made on the basis of the needs of the buyer and the seller at the moment of closing. We quote dealers' prices, f.o.b. customers' works, St. Louis industrial district, as follows:

Per Gross Ton		
Old iron rails. Old steel rails, rerolling. Old steel rails, less than 3 ft. Relaying rails, standard section, sub-	33.50 to 30.00 to	34.50 30.50
ject to inspection	40.00 to 27.00 to	42.00 28.00
scrap Heavy shoveling steel Ordinary shoveling steel Frogs, switches and guards cut apart Ordinary bundled sheet scrap Heavy axle and tire turnings.	29.00 to 26.50 to 24.00 to 29.00 to 17.00 to 16.00 to	30.00 27.50 24.50 30.00 17.50 16.50
Per Net Ton		
iron angle bars Steel angle bars Iron car axles Steel car axles Wrought arch bars and transoms No. 1 railroad wrought No. 2 railroad wrought Railroad springs Steel couplers and knuckles Locomotive tires, 42 in. and over, smooth inside No. 1 dealers' forge Cast iron borings No. 1 busheling No. 1 bisheling No. 1 bisheling No. 1 railroad cast scrap Stove plate and light cast scrap Railroad malleable Agricultural malleable Pipes and flues Heavy railroad sheet and tank scrap Railroad grate bars Machine shop turnings	27.00 to 45.00 to 45.00 to 34.00 to 34.00 to 34.00 to 29.00 to 27.00 to 25.00 to 12.50 to 25.00 to 18.00 to 21.00 to 21.00 to 14.00 to 21.00 to 18.50 to 17.50 to 18.50 to 17.50 to 18.50 to 17.00 to 18.50 to 17.00 to 14.50 to 14.	27.50 46.00 34.50 34.50 29.50 27.50 29.00 42.50 22.50 13.00 21.50 21.50 21.50 22.00 14.50 21.50 21.50 21.50 21.50

#### Buffalo

Buffalo, N. Y., May 21, 1917.

Finished Iron and Steel.-Plates lead in demand, with large inquiry for all lines, but producers and sales agencies are restrained from taking orders for the limited unsold tonnages at their disposal, while awaiting the Government's actual specifications. Some agencies the Government's actual specifications. have completely stopped the sale of finished materials until the Government's requirements are fully known. The shipbuilding demand from Canada continues to be heavy; but it is understood that so far comparatively little tonnage has been actually placed. The 200 tons of steel required for the Buffalo General Hospital Nurses' Home has been distributed equally between the Ferguson Steel & Iron Company and the Kellogg Structural Steel Company, Buffalo. The Charles F. Ernst Sons Iron Works has received contract for 200 tons steel for plant extension of the Aluminum Castings Company, Buffalo; and the American Bridge Company the contract for 300 tons for the open-hearth steel plant extension for the Donner Steel Company, Buffalo.

Pig Iron.—The market is very strong, and prices have again gone up for 1917 delivery, gaining at least \$1.00 per ton during the week. While sales were not of as large aggregate volume as during the previous week, they still kept up steadily for various periods of shipment over this year and into next, and there is inquiry before the market at the present time, totalling

20,000 to 25,000 tons of all grades. It is noted that some of the larger consumers of pig iron are now inquiring for tonnages to run through the first half of 1918. Some furnace interests have found it necessary to make a further advance in price during the past week on various foundry grades; so that the range is now from \$45.00 to \$48.00, at furnace, for shipment over the remainder of this year; from \$42.00 to \$45.00 for shipment during the first quarter of 1918, and from \$40.00 to \$42.00 for shipment during second quarter. One or two producers are fighting shy of 1918 orders, and are not selling into next year except for special requirements of regular customers.

For 1917 delivery we quote as follows, f.o.b. fur-

nace, Buffalo:

High silicon irons	\$48.00
No. 1 foundry	47.00
No. 2 X foundry	
No. 2 plain	
No. 3 foundry	45.00
Gray forge	45,00
Malleable	47,00
Basic	47.00
Lake Superior charcoal, f.o.b. Buffalo.\$52.00 to	53.50

Old Material.—The market is displaying a good deal of activity in all commodities. Heavy melting steel is particularly strong, with an advance of \$1.00 to \$1.50 per ton. Clean cast borings also show large demand, with a price advance of \$1.00 to \$2.00 per ton, and pronounced indications of going higher. No. 1 railroad and machinery cast are now held at \$29.00 to \$30.00, with good-sized sales, and there has been considerable dealing in other lines of scrap material, but without price changes.

We quote dealers' asking prices per gross ton, f.o.b.

Buffalo, as follows:

Heavy melting steel         \$28.00 to \$29.00           Low phosphorus         36.00 to 38.00           No. 1 railroad wrought         37.00 to 38.00           No. 1 railroad and machinery cast         29.00 to 30.00           Iron axles         45.00           Steel axles         45.00           Carwheels         26.50 to 27.50           Railroad malleable         27.50 to 28.50           Machine shop turnings         13.00 to 13.50           Heavy axle turnings         19.50 to 20.00           Iron rails         29.50 to 30.00           Locomotive grate bars         18.00 to 18.50           Stove plate         18.00 to 18.50
No. 1 railroad wrought     37.00 to     38.00 to       No. 1 railroad and machinery cast     29.00 to     30.00 to       Iron axles     45.00 to     30.00 to       Steel axles     45.00 to     27.50 to       Carwheels     26.50 to     27.50 to     28.50 to       Machine shop turnings     13.00 to     13.50 to     20.00 to       Heavy axle turnings     19.50 to     20.00 to       Clean cast borings     14.50 to     15.00 to       Iron rails     29.50 to     30.00 to       Locomotive grate bars     18.00 to     18.50 to
No. 1 railroad and machinery cast     29.00 to     30.00 tron axles     45.00 tron axles     45.00 tron axles     45.00 tron axles     45.00 tron axles     27.50 to     28.50 tron axles     27.50 to     28.50 tron axles     27.50 to     28.50 tron axles     28.50 tron axles     13.00 to     13.50 tron axles     15.50 to     29.00 tron axles     29.50 to     30.00 tron rails     29.50 to     30.00 tron axles     18.50 to     18.50 tron axles     29.50 tron axles     29.50 tron axles     20.00 tron axl
Iron axles
Steel axles         45.00           Carwheels         26.50 to 27.50           Railroad malleable         27.50 to 28.50           Machine shop turnings         13.00 to 13.50           Heavy axle turnings         19.50 to 29.00           Clean cast borings         14.50 to 15.00           Iron rails         29.50 to 30.00           Locomotive grate bars         18.50 to 18.50
Carwheels         26.50 to 27.50           Railroad malleable         27.50 to 28.50           Machine shop turnings         13.00 to 13.50           Heavy axle turnings         19.50 to 20.00           Clean cast borings         14.50 to 15.00           Iron rails         29.50 to 30.00           Locomotive grate bars         18.00 to 18.50
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Machine shop turnings       13.00 to 13.50         Heavy axle turnings       19.50 to 20.00         Clean cast borings       14.50 to 15.00         Iron rails       29.50 to 30.00         Locomotive grate bars       18.00 to 18.50
Heavy axle turnings     19.50 to 20,00       Clean cast borings     14.50 to 15,00       Iron rails     29.50 to 30,00       Locomotive grate bars     18.00 to 18.50
Clean cast borings     14.50 to 15.00       Iron rails     29.50 to 30.00       Locomotive grate bars     18.00 to 18.50
Clean cast borings     14.50 to 15.00       Iron rails     29.50 to 30.00       Locomotive grate bars     18.00 to 18.50
Iron rails
Locomotive grate bars 18.00 to 18.50
No. 1 busheling scrap 23.00 to 23.50
No. 2 busheling scrap 14.00 to 14.50
Bundled sheet scrap 16.50 to 17.00

#### British Steel Market

Tin Plates Advancing—Pig Iron Firm—Ferromanganese Nominally Higher

LONDON, ENGLAND, May 23, 1917.—(By Cable.)

The pig-iron market is firm and the demand for Cleveland iron for forward delivery has increased. Tin plates are strong at 31s. and black sheets are quoted at £20 15s. Ferromanganese is nominal at about £45. American semi-finished steel is very quiet. We quote as follows:

Tin plates, coke, 14 x 20, 112 sheets, 108 lb., f.o.b. Wales, 31s against 30s. 6d. last week.

Ferromanganese, 145 against f44 nominal, a week ago.

Ferrosilicon, 50 per cent, c.i.f., £35 upward.

#### Fostoria Pressed Steel Company

The Fostoria Pressed Steel Company, Fostoria, Ohio, has been incorporated and organized for the purpose of manufacturing sheet-metal and pressed-steel products, especially for automobile parts. The company has bought about 22 acres north of Fostoria, on which it will erect a new plant, the buildings to be of brick and monitor type, well lighted and ventilated, and the equipment will be modern in every way. The equipment will consist of power presses and other metal-working tools for turning out products as noted above. The company will also install a complete japanning and enameling department. The officers are Henry Rothrock, president; George E. Kirk, vice-president; E. C. Wolfe, secretary, and C. D. Pifer, treasurer and general manager.

#### Freight Rate Reduced on Southern Pig Iron to Wisconsin

Washington, May 22, 1917.—Rates on pig iron in carloads from Birmingham, Ala., Chattanooga, Tenn., and grouped points to La Crosse, Wis., have been found to be unreasonable and unduly prejudicial by the Interstate Commerce Commission in the case of the La Crosse Shippers' Association against the Chicago, Burlington & Quincy Railroad Company et al., and substantial reductions have been ordered. At the time the complaint was filed the following rates applied on pig iron in carloads to La Crosse: From Birmingham, \$5.35; from Chattanooga, \$5.10; and from La Follette, \$4.85. Reference to these points embraces the groups which they represent. A reduction of 35 cents in each of the rates was asked.

On March 10, 1916, a rate of \$4.50 was made applicable from La Follette, and at the hearing the complaint was withdrawn with respect to this group. Contemporaneously the rate from Chattanooga was reduced to \$5. Prior to the reduction in the rate from Chattanooga the rates on pig iron from that point to points on the Ohio River and beyond were fixed at a differential under the rate from Birmingham. Subsequently the spread was increased by 10 cents, the amount by which the rate from Chattanooga was reduced.

A comparison of the rate to La Crosse with those from Birmingham and Chattanooga to points in northern Illinois, to Mississippi river crossings in Iowa and to certain points in eastern Wisconsin shows earnings per ton-mile disproportionately against La Crosse. The defendant carriers contended that the difference between the La Crosse rate and the eastern Wisconsin rate was due to the fact that the lake points and contiguous interior related points are embraced within the Illinois prorating territory, which is considered a part of central freight association territory and that Rock Island and Davenport, points cited by complainant, are treated as within central freight association territory. Testimony was adduced with a view to showing dissimilarity of circumstances and conditions surrounding rates to La Crosse and those into central freight association territory. The commission finds, however, that this difference is too slight to merit consideration and holds that the rates are unreasonable to the extent that they exceed \$5 per long ton from Birmingham and \$4.75 from Chattanooga and grouped points taking the same rates to La Crosse.

#### Expansion of Utah Iron & Steel Company

The new 50-ton open-hearth furnace of the Utah Iron & Steel Company, Midvale, near Salt Lake City, Utah, is to be put into operation on June 15. The company has built a 24-in. blooming mill and broken up its 16 and 10-in. mills, and increased its capacity to roll channels up to 3 in., angles up to 4 in., and light rails up to 30 lb. per yard. The blooming mill is of the three-high type, with tilting tables, and the furnace uses producer gas made in a Swindell producer with Utah coal. A Wellman-Seaver-Morgan charging machine is to be used. The steel will be cast in 10 x 10-in. ingots. Evan J. Moses is superintendent.

The Miami Products Company, Chicago, Ill., has changed its name to the Miami Metals Company. The same officers, Francis H. Hardy, president; Herman A. Brassert, vice-president; Chester D. Tripp, vice-president; Truman F. Miller, secretary and treasurer, continue. The company's business is the manufacturing and selling of ferromanganese and spiegeleisen.

In the report of the April meeting of the American Electrochemical Society at Detroit, as given in The Iron Age, May 10, 1917, p. 1133, C. H. Vom Baur was misquoted in his discussion of the Rennerfelt electric furnace. What he said was that a careless person had broken two electrodes in a heat, but he had seen a furnace operated two days without breaking one.

#### Liberty Loan Subscriptions

The Westinghouse Electric & Mfg. Company, East Pittsburgh, has subscribed for \$2,500,000 worth of Liberty Loan Bonds, one-half to be subscribed for in New York and one-half in Pittsburgh. The company will also assist its upwards of 30,000 employees to subscribe for the bonds.

The McKeesport Tin Plate Company, McKeesport, Pa., subscribed for \$250,000 worth of Liberty Bonds, and will allot \$250,000 of the bonds to employees, if they desire them. They will be permitted to pay for the bonds as they are able to do so.

The Crucible Steel Company of America, Pittsburgh, has subscribed for \$1,000,000 of Liberty Loan Bonds. The company has sent a letter to its stockholders and employees, stating that they will be allowed to subscribe for as many of these bonds as they desire.

The Pittsburgh Steel Company, Union Arcade Building, Pittsburgh, has subscribed \$1,000,000 to the Liberty Loan. This company has also, as a patriotic measure, anticipated payment of its income tax, which can be paid any time up to June 30, without penalty.

George P. Hart, president Stanley Works, New Britain, Conn., in a stirring address to employees of the company urges them to subscribe to the Liberty Loan and states that to make it convenient for them to give their subscriptions the company will pay the Government for such bonds as may be subscribed for by employees, delivering them to such of the subscribers as pay for them in full and giving the option of such employees as do not wish to pay in full of paying on a weekly, monthly or quarterly installment plan, so that the bonds will be fully paid for by July 1, 1918.

The employees of the American Steel Export Company, New York, met recently at the suggestion of the president, H. W. McAteer, who announced that they would be able to subscribe to the Liberty loan through the company as a holding organization. Within a short time \$75,000 was pledged.

The Shenango Furnace Company, Pittsburgh, W. P. Snyder, president, has subscribed for \$500,000 of Liberty Loan bonds.

The Ohio Iron & Steel Company, operating Mary blast furnace at Lowellville, Ohio, has subscribed \$200,000 to the Liberty Loan fund.

#### The Crucible Steel Company Makes Additions

The Crucible Steel Company of America, Pittsburgh, is making large additions to the open hearth plant at its Park Works in that city. Four new stationary open hearth furnaces, one tilting and one electric furnace are being installed with all modern appliances for handling the output. This new steel plant is being erected on the site of the old puddle mill building, the puddling department having been out of commission for some years. The company has placed a contract with the McClintic-Marshall Company of Pittsburgh for 2110 tons of structural steel for a new steel building to house this new open hearth department.

### Will Increase Mill Capacity

Youngstown, May 22.—The Youngstown Sheet & Tube Company officially announces that the finishing department will be extended. Another plate mill to make large skelp iron and steel and a 20-inch tube mill are planned among the additions. Whether the work on additions will begin before or after the war is ended is yet to be determined. With its additional open-hearth furnaces, the company will have a large ingot capacity, and it is planned to turn the output into finished steel.

The Wickwire Steel Company, Buffalo, N. Y., will practically double its present ore-handling plant and has placed a contract with the Wellman-Seaver-Morgan Company, Cleveland, for an ore bridge 200 ft. long, equipped with a 5-ton bucket, and for a Hulett ore unloader, equipped with a 7½-ton bucket.

# Finished Iron and Steel f.o.b. Pittsburgh

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 16.9c.; Philadelphia, 15.9c.; Boston, 18.9c.; Buffalo, 11.6c.; Cleveland, 10.5c.; Cincinnati, 15.8e.; Indianapolis, 17.9c.; Chicago, 18.9c.; St. Louis, 23.6c.; Kansas City, 43.6c.; Omaha, 43.6c.; St. Paul, 22.9c.; Denver, 68.6c.; New Orleans, 30.7c.; Birmingham, Ala., 45c. Denver, pipe, 76.1c., minimum carload, 46,000 lb.; structural steel and steel bars, 83.6c., minimum carload, 36,000 lb. Pacific coast (by rail only), pipe, 65c.; structural steel and steel bars, 75c., minimum earload, 50,000 lb.; structural steel and steel bars, 80c., minimum carload, 40,000 lb. No freight rates are being published via the Panama Canal, as the boats are being used in transatlantic trade.

Structural Material.-I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 3 to 6 in. on one or both legs, 1/4 in. thick and over, and zees 3 in. and over, 4c. Extras on other shapes and sizes are as follows:

Cents per lb.
I-beams over 15 in
H-beams over 18 in
Angles over 6 in., on one or both legs
Angles, 3 in. on one or both legs less than 1/4 in.
thick, as per steel bar card, Sept. 1, 190970
Tees, structural sizes (except elevator, handrail,
car truck and conductor rail)
Channels and tees, under 3 in. wide, as per steel
bar card, Sept. 1, 1909
Deck beams and bulb angles
Handrail tees
Cutting to lengths, under 3 ft. to 2 ft. inclusive
Cutting to lengths, under 2 ft. to 1 ft. inclusive50
Cutting to lengths, under 1 ft
No charge for cutting to lengths 3 ft. and over.

Plates.-Tank plates, ¼ in. thick, 6 in. up to 100 in. wide, 6c. to 7c. base, net cash, 30 days, or 1/2 of 1 per cent discount in 10 days, carload lots. Extras are:

Quality Extras
Cents per lb.
Tank steel
Pressing steel (not flange steel for boilers)
Boiler and flange steel plates
"A. B. M. A." and ordinary firebox steel plates20
Still bottom steel
Locomotive firebox steel
Marine steel, special extras and prices on application.
Gage Extras
Rectangular, 1/4 in, thick, over 6 in, wide to 100 in, wide. Base
Lighter than 1/4 in., to 3/16 in., up to 72 in. wide10
Lighter than 1/4 in., including 3/16 in., over 72 in. to 84 .20
*Lighter than ¼ in., including 3/16 in., over 84 in. to 96 .30
*Lighter than 1/4 in., including 3/16 in., over 96 in. to 100 .40
Highton than 1/ in including 9/16 in over 100 in to 100 45

ı	Lighter than 1/4 in., including 3/16 in., over 72 in. to 84.	. 1
ı	Lighter than 1/4 in., including 3/16 in., over 84 in. to 96.	
ı	*Lighter than 1/4 in., including 3/16 in., over 96 in. to 100 .	
ı	Lighter than 1/4 in., including 3/16 in., over 100 in. to 102.	
	Lighter than 3/16 in., including No. 8, up to 72 in. wide	
ı	*Lighter than 3/16 in., including No. 8, over 72 in. to 84	
	*Lighter than 3/16 in., including No. 8, over 84 in. to 96	
ı	Lighter than No. 8, including No. 10, up to 60 in. wide.	
ı	Lighter than No. 8, including No. 10, over 60 in. to 64	
ı	Up to 72 in. and not less than 10.2 lb. per sq. ft. will be	
J	considered ¼ in.	
ē	Over 72 in. must be ordered 1/4 in. thick on edge, or not	
B	less than 11 lb. per sq. ft. to take base price.	
۱	Over 72 in. wide, ordered less than 11 lb. per sq. ft., down	
=1	to well-1-2 -0 0 14 0 t - 4 5 - 4 0 14 0 t	

Over 12 In.						. It., dow
to weight	of 3/16	in., take	price	of 3/16	in.	
Over 72 In	ordered	weight	3/16 1	n toko	No	8 price.
Over 72 in.,	ordered	weight	No 8	taka Na	10	price
A 10 110 1100	or det off	Mergue	140. 0,	CHENG TAI	0. 10	brice

	Over 72 in., ordered weight 3/16 in., take No. 8 price. Over 72 in., ordered weight No. 8, take No. 10 price.	
7	Width Extras	
	Over 100 in. to 110 in. inclusive.       0!         Over 110 in. to 115 in. inclusive.       1!         Over 115 in. to 120 in. inclusive.       1!         Over 120 in. to 125 in. inclusive.       2!         Over 125 in. to 130 in. inclusive.       5:         Over 125 in. to 130 in. inclusive.       5:         Over 130 in.       1.0	0550
	Length Extras	
	Universal plates 80 ft. long up to 90 ft. long	õ
	Cutting Extras	
	No charge for rectangular plates to langths 2 ft and over	IE.
	Lengths under 2 ft. to 1 ft. inclusive	05
	Circles over 100 to 110 in. (width extra)	5
	Circles over 120 to 125 in. (width extra)	5
	Circles over 120 to 180 in. (width extra)	0
	Circles unders 2 ft. to 2 ft., inclusive	Ö
	Half circles to he construction of the construction and	5
	Sketches not over four straight cuts, inc. straight taper .1 Sketches having more than four straight cuts	
	a radius take complete circle extras.	

<sup>\*</sup>Including extra for width.

Wire Rods.—Including chain rods, \$85 to \$90.

Wire Products.-Prices to jobbers, effective April 20: Fence wire Nos. 6 to 9, per 100 lb., terms 60 days or 2 per cent discount in 10 days, carload lots, annealed, \$3.45; galvanized, \$4.15. Galvanized barb wire and

staples, \$4.35; painted, \$3.65. Wire naile, \$3.50. vanized nails, 1 in. and longer, \$2.20 advance over base price; shorter than 1 in., \$2.70 advance over base price. Cement coated nails, \$3.40. Woven wire fencing, 48 per cent off list for carloads, 47 off for 1000-rod lots, 46 off for less than 1000-rod lots.

Wrought Pipe.—The following are the jobbers' carload discounts on the Pittsburgh basing card in effect from May 1, 1917, all full weight:

541	Butt	Weld	
14. 14 and %	ack Galv. 42 1514 46 3114 49 351/2	Inches Black 14 and 14 30 34 31 12 35 34 to 11/2 38	Galv. 3 4 17 22
7 to 12 13 and 14	Lap 42 29 ½ 45 32 ½ 42 28 ½ 32 ½	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	8 16 17 20 20
14, 14 and 14	Weld, extra 38 20½ 43 30½ 47 34½ 48 35½	strong, plain ends 1/4, 1/4 and 1/4, 29 1/2	12 21 23
2 ½ to 4	40 28 ½ 42 31 ½ 42 30 ½ 38 24 ½ 33 19 ½	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	9 16 19 22 21 - 15 10

To the large jobbing trade an additional 5 per cent is allowed over the above discounts, which are subject to the usual variation in weight of 5 per cent. Prices for less than carloads are two (2) points lower basing (higher price) than the above discounts on black and three (3) points on galvanized, but in some sections of the country discounts on less than carloads are three (3) points less (higher price) than the carload discount on both black and galvanized steel pipe. On butt and lap weld sizes of black iron pipe, discounts for less than carload lots to jobbers are four (4) points lower (higher price) than carload lots, and on butt and lap weld galvanized iron pipe are five (5) points lower (higher price).

Boiler Tubes .- Nominal discounts on less than carloads, freight added to point of delivery, effective from Nov. 1, 1916, on standard charcoal iron tubes, and from April 2, 1917, on lap welded steel tubes are as follows:

Lap Welded Steel	Standard Charcoal Iron
1% and 2 in	11/4 in
2 1/4 in	1% and 2 in
2 1/2 and 2 1/4 in	2 1/4 In
3 and 3¼ in	2 % and 2 % in
3 1/2 to 4 1/2 in	3 and 3¼ in
5 and 6 in	5 and 6 in
t 10 to m	7 to 12 in 24

Above discounts apply to standard gages and to even gages not more than four gages heavier than standard in standard lengths.

Locomotive and steamship special charcoal grades bring higher prices.
1% In., over 18 ft., and not exceeding 22 ft., 10 per cent net extra.
2 in. and larger, over 22 ft., 10 per cent net extra.
2 in. and larger, over 22 ft., 10 per cent net extra.

Sheets.—Makers' prices for mill shipments on sheets of United States standard gage, in carload and larger lots, are as follows, 30 days net, or 2 per cent discount in 10 days:

[Open-nearth stock, \$5 per ton above these prices.]
Blue Annealed—Bessemer
Cents per lb.
Nos. 3 to 8
Nos. 9 and 10
Nos. 11 and 12
Nos. 13 and 14
Nos. 15 and 16
Box Annealed, One Pass Cold Rolled-Bessemer
Nos. 17 to 21
Nos. 22 and 24
Nos. 25 and 26
No. 27
No. 28
Galvanized Black Sheet Gage-Bessemer
Nos. 10 and 11
Nos. 12 and 14
Nos. 15 and 16
Nos. 17 to 21
Nos. 22 and 24
Nos. 25 and 26
No. 27
No. 28
No. 29
No. 308.50 to 9.00
Tin-Mill Black Plate-Bessemer
Nos. 15 and 16
Nos. 17 to 21
Nos. 22 to 24
Nos. 25 to 27
No. 28
No. 29
No. 30
Nos. 30 1/4 and 31
AUG. 0073 mile 02111111111111111111111111111111111111

# Metal Markets

#### The Week's Prices

Cents Per Pound for Early Delivery							
Copper, New York Tin. Lead Spelter ,							
		Electro-	New.	New	St.	New	St.
May	Lake	lytic	York	York	Louis	York	Louis
16	31.50	31.50	66.25	10.50	10.35	9.37 %	9.12%
17	31.50	31.50	65.25	10.50		9.37 12	
18	31.50	31.50	65,00	10.50	10.35	9.37 1/2	
19	31.50	31.50		10,50	10.35	9.37 10	9.1215
21	31.50	31.50	65,25	10.75	10.60	9.50	9.25
2.0	31.50	31.50	65,50	10.87%	10.72%	9.50	9.25

New York, May 23, 1917.

All the metals are strong, but none are especially active. Copper is firm and entirely nominal. Tin is quieter, but still strong. Lead maintains its lead as to strength, and has advanced. Spelter continues dull, but the tone is regarded as stronger. Antimony is quiet, with little change.

#### New York

Copper.—The market is a waiting one, and quotations, even for future positions, are almost entirely nominal. Consumers seem desirous of being kept posted, but manifest no desire to buy. Attempts on the part of some sellers to create an interest have been without results in an endeavor to sell nearby shipments. The quotation for early delivery for both Lake and electrolytic is still 31.50c., New York, but this is entirely nominal. Some sellers quote even higher. quotation for third quarter is generally regarded as 28.50c. to 29c., New York, with July metal very hard to obtain. One seller states that in order to obtain July delivery, it is necessary to buy metal for delivery in July, August and September. In fact, metal desired in July or earlier can only be obtained through second Exports in the first four months of this year, with those for April estimated, are stated to be in excess of 170,000 tons. The previous greatest exports for four consecutive months were 152,000 tons early in 1914, making the exports so far this year 13 per cent greater than the period referred to. The London quotation for spot electrolytic is unchanged from last week at £142.

Tin .- In the latter part of last week sales were fairly good, amounting to about 300 tons, mostly for spot and nearby delivery, but since then the market has been extremely dull. Some of the reasons for this dullness are that sellers are full of uncertainty as to the issuance of permits for shipments from England, and as to the probability of the metal arriving safely, and therefore hesitate to commit themselves. On the other hand, buyers have very good reason for going While they are probably fairly well covered as slow. to supplies, they do not know exactly where they stand as to the proposed Government tax, and this causes them them also to hesitate. Spot supplies are strongly held, and the market in general is a narrow and quiet one at present. Yesterday the quotation for spot Straits was 65.50c., New York. The London market continues very strong, although it receded slightly the past week. The quotation there yesterday for spot Straits was £254 7s. 6d., an advance of more than £1 since last week, making the advance in the last two weeks over £22. Arrivals up to and including May 21 have been 3525 tons, with the quantity affoat 3422 tons.

Spelter.—The interesting feature of the present situation is that futures are as strong, if not stronger, than spot and near-by deliveries. At the same time the market is very dull, with transactions few and decidedly limited. In the last day or two prices have stiffened slightly for spot and May delivery, and are now about 9.25c., St. Louis, or 9.50c. New York, at which a few sales are reported. The quotation for June and July, and even third quarter, is no less, with the disposition of sellers to hold back on committing themselves for the later positions. With ore high, and with the expectation of considerable Government buying still to come, a more active and stronger market is not unlooked for, thus contributing to a steady and

firm situation in spite of almost absolute stagnation now.

Lead.—The lead market continues to maintain its very strong position, because it is known that Government buying, when it comes, will be large and that the supplies may not be adequate. Some producers are trying to prevent the market from going higher, but have not met with much success. Last week, prices were practically stationary, but firm, but are higher again this week, with the quotation yesterday at 10.72½c., St. Louis, and 10.87½c., New York, for early delivery. Demand this week has been good, especially for prompt and June metal. Very liberal sales are reported, but they have been quietly negotiated. On May 17 the American Smelting & Refining Company advanced its quotation from 9.50c. to 10c. per pound, New York.

Antimony.—The market is very quiet. Despite the fact that a cargo arrived last week which left the Orient in February, the spot market is practically unchanged at 25c. to 26c., New York, for Chinese and Japanese grades.

Aluminum.—There is an absence of active demand, and the market is dull with quotations unchanged at 59c. to 61c., New York, for No. 1 virgin metal, 98 to 99 per cent pure, for early delivery.

Old Metals.—The market is higher. Dealers' selling prices are as follows:

Cents per lb.
Copper, heavy and crucible31.00 to 31.50
Copper, heavy and wire
Copper, light and bottoms27.50 to 28.25
Brass, heavy
Brass, light
Heavy machine composition27.00 to 27.75
No. 1 yellow rod brass turnings
No. 1 red brass or composition turnings, 21.50 to 22.50
Lead, heavy 9.625
Lead, tea 9.00
Zinc 7.50

#### Chicago

MAY 22.—The market here has been largely marking time, although in some quarters there has been pretty fair buying, some of the larger concerns having material sold and covering on future requirements. We quote as follows: Casting copper, 31c.; Lake, 32.25c. to 50c.; electrolytic, 32.50c.; tin, carloads, 65.50c.; small lots, 68c. to 69c.; lead, 10.75c.; spelter, 9.25c. to 9.37½c.; sheet zinc, 19c.; Oriental antimony, 28c. to 30c. On old metals we quote buying prices for less than carload lots as follows: Copper wire, crucible shapes, 26c.; copper clips, 26c.; copper bottoms, 23.50c.; red brass, 23.50c.; yellow brass, 18c.; lead pipe, 8.50c.; zinc, 6.50c.; pewter, No. 1, 35c.; tinfoil, 40c.; block tin, 45c.

#### St. Louis

May 21.-Metals have been strong and tin has been exceptionally high during the week. The close to-day on carload lots was: Lead, 10.75c. for June delivery; spelter, 9.25c. to 9.50c. In less than carload lots the quotations were: Lead, 11.50c.; spelter, 10.50c.; tin, 70c.; Lake copper, 34c.; electrolytic copper, 33.50c.; Asiatic antimony, 30c. In the Joplin district the medium grade ore prices stiffened materially, but the top price for the premium grades was \$80 per ton, basis of 60 per cent metal, with an average for the district of all grades of \$78 per ton and a range down to \$70 for the second grade ores. Calamine was steady at \$38 to \$45 per ton, basis of 40 per cent metal, with the average for the week about \$45 per ton owing to the dominance of the higher grades. Lead ore was firm at \$120 per ton, basis of 80 per cent metal, and the average for the week \$119 per ton for the district. On miscellaneous scrap metals we quote dealers' price, buying, as follows: Light brass, 12c.; heavy yellow brass, 13c.; heavy red brass, 19c.; heavy copper and copper wire, 22.50c.; pewter, 25c.; tinfoil, 36c.; lead, 6c.; zinc, 6.50c.; tea lead, 3.50c.

An exemption from all classes of taxation for five years (to 1921) has been granted by the Chinese Government to the Hanyehping Corporation, the large iron and steel producer of China. The original exemption was granted in 1911 because of damage done to the plant.

#### INAUGURATES BONUS SYSTEM

# Cleveland Company's Plan to Encourage Employes—News of Labor World

The Wellman-Seaver-Morgan Company, Cleveland, paced a new bonus system in effect May 15 to encourage the constant and prompt attendance of its employees in the shop and office. Under the plan, employees are to be given, in addition to their regular wages, approximately 5 per cent of their earnings in case they work full time during any two weeks' pay period. If a man is absent from his work one hour or less during that period, he may make up the time lost by straight time work outside of his regular working hours, and by so doing will not be barred from the bonus. The bonus system applies to shop employees and office employees earning \$2,000 a year or less.

As a safety movement in behalf of its female employees the Ferry Cap & Set Screw Company, Cleveland, has provided the 150 young women employed in its plant with bloomers which will be worn during working hours. Women employed in a manufacturing plant are always in danger of having their skirts caught in machinery and it was largely with a view to eliminating this danger that the wearing of bloomers was decided upon. The women in the plant are employed on drill presses, punch presses, threading machines and in the assorting, inspection, packing and shipping departments. Bloomer suits have recently been adopted by many of the women employed on machine work by the Cleveland Hardware Company, but in that plant the wearing of bloomers is not compulsory and the employees provide their own garments.

The Hayes Wheel Company, Anderson, Ind., announces an increase of 15 per cent in the wages of its 575 employees, has given them the use of five acres for garden spaces and has provided a store at which groceries will be sold to them at cost.

Union tinners employed at Ashland, Ky., went on strike when their employers declined to pay them \$4 for an eight-hour day. They had been receiving from 37½ to 46 1/24 cents an hour.

The strike of molders at the Western Gas Construction Company's plant, Fort Wayne, Ind., which has been on for a year, was settled May 15. The company granted the scale asked, \$4 a day.

About 400 employees in the wire rope shop of John A. Roebling's Sons Company, Trenton, N. J., declared a strike on May 14 with demand for increased wages. A majority of the men returned to work at the existing wage scale on May 16.

Effective May 16, the New Jersey Zinc Company has increased the wages of employees at its Palmerton, Pa., works by 3 cents an hour, making a minimum rate of 28 cents an hour.

Employees in the boiler shop of the Camden Iron Works, Camden, N. J., declared a strike on May 17, with demand for increase in wages from 37½ to 45 cents an hour for mechanics and from \$2.50 to \$2.85 per day for helpers.

About 500 employees of the shipbuilding plants of the Camden Shipbuilding Company, John H. Mathis & Company, Quigley & Davis, the Howlett Shipbuilding Company and the Noecker & Ake Shipbuilding Company, all of Camden, N. J., caused a strike on May 16 with demand for increase in wage scale from 40 to 44 cents an hour to a flat rate of 53 1/3 cents for an 8-hr. day.

The McDermott Engineering Company, Whitehall Street, Allentown, Pa., manufacturer of boilers, tanks, etc., has announced a wage increase of 10 per cent.

The Pottsville Foundry & Stove Company, Pottsville, Pa., has given a wage increase of 10 per cent to all employees.

The Carbon Iron & Steel Works, Parryville, Pa., have advanced the wages of employees 10 per cent.

The John Wood Mfg. Company, Conshohocken, Pa., has increased the working time at its plant from a two to a three shift schedule of 8 hr. each. It is said that the company has received a large contract from the Government necessitating this change.

Andrew J. Corcoran, Inc., 761 Jersey Avenue, Jersey City, N. J., manufacturer of windmills, tanks, etc., has placed a new working schedule of 50 hr. weekly into effect. The men will receive the same wages as they have heretofore for 60 hr.

have heretofore for 60 hr.

The American Brass Company, Waterbury, Conn., beginning May 6, will pay all of its employees working by the hour an advance of 2½ cents per hour. This advance will be in effect in all of its plants. Another notice posted states that equitable adjustment of piece work rates will also be made.

The Farrell Foundry & Machine Company, Ansonia, Conn., has given its laborers an increase of 25 cents per day.

The employees of the Elliot Frog and Swith Works, East St. Louis, Ill., have been given a wage increase of 15 per cent in response to a demand made after a 10 per cent increase had been accorded.

The Crane Company's St. Louis plant has accorded an increase of 10 per cent to all its employees, retroactive as to the month of April.

The N. O. Nelson Company, operating at St. Louis and other points, has accorded its employees an advance of 20 per cent, effective June 1, for all receiving \$20 or less per week and 10 per cent for all receiving more than \$20 per week.

The Crucible Steel Company of America, Pittsburgh, recently gave all its salaried employees a bonus of 10 per cent on their salaries for an entire year. This company also voluntarily gave a bonus of the same amount to its salaried employees last Christmas, making a bonus of 20 per cent on salaries paid in a little over four months.

# Proposed Increase in Rates Is Withdrawn

Washington, May 23, 1917 (By Wire).—The Interstate Commerce Commission this morning announced that the eastern railroads have cancelled their tariffs proposing increases in the rail and water rates on pig iron from the Birmingham district to points in New England. The proposed increases ranged from 15 to 50 cents per ton and were to have become effective Feb. 15 and March 20, but because of strong protests were suspended by the commission pending investigation. In view of the action of the carriers in withdrawing the increased tariffs, the commission states its investigation will be discontinued.

## Molders' Strike Settled

The molders' strike at the plant of the H. B. Smith Company, Westfield, Mass., which has been in force since Feb. 17, has been settled. About 250 men went on strike, throwing a force of about 1100 other men out of work. A 9-hr. day is substituted for a 10-hr. day; the minimum wage for molders is increased from \$3.50 per day to \$4.25 per day; day laborers will receive \$2.50 per day in place of \$2.25, and night laborers will be increased from \$2.50 to \$2.75.

The shops of the Boston & Albany Railroad at Allston, Beacon Park, East Boston, Somerville, Worcester and Springfield, are affected by a machinists' strike, the demand being for an increase of four cents an hour. The strike leaders threaten to carry the trouble to the shops of the western division of the road.

#### Present Rates Adopted

The sheet and tin plate wage committees of the Amalgamated Association in session at St. Louis, last week, adopted the preamble and also the present rates in the sheet and tin plate scales for the year beginning July 1, next. It was also recommended that the current rates of wages in jobbing mills be continued for the year starting July 1. Wages in sheet and tin plate mills, and also jobbing mills, are based on sliding scales, governed by actual invoiced sales averages, that are determined bi-monthly by committees from the Amalgamated Association and the sheet and tin plate mills. No time has yet been fixed for conferences between the Amalgamated Association and the sheet and tin plate mills, and also the bar iron manufacturers, but these will likely be held early in June.

## IRON AND INDUSTRIAL STOCKS

#### Decided Improvement in Sentiment-Numerous Advances

New York, May 23, 1917.

A distinct improvement in sentiment in the stock market developed last week. It seems like a far cry from Petrograd to Wall Street, but it is clear that recent developments in the Russian capital, leading to the hope that the new government will become firmly established, had a good effect in the business world. The plan of sending the American mission to Petrograd forms a basis for still further expectations that the Russian people will be shown the folly of not standing unitedly by the new government. When it was announced on Wednesday of last week that the Government at Washington had loaned \$100,000,000 to Russia, Wall Street immediately took a more optimistic view as to Russian conditions, as it was felt that the Government would not loan Russia such a large amount unless it had positive assurances of sound financial conditions at Petrograd. Trading increased rapidly in volume and on last Thursday new high records for the year were established for United States Steel, Lackawanna Steel and some other companies. week ended with Wall Street in a cheerful frame of mind. On Monday of this week there was a continuation of the improvement. Lackawanna Steel was one of the very active stocks and in dealings of 29,000 shares advanced to 95, a net gain of 3½ points, the highest price Lackawanna has touched this year, compared with a record in 1916 of 107. During pression of 1914 this stock sold at about 26. During the de-United States Steel was also very active Monday, registering a gain of 3% points, while Republic Iron & Steel gained 1% points and Bethlehem Steel 2 points.

The range of prices on active iron and industrial stocks from Wednesday of last week to Tuesday of

this week was as follows:

CHIE WOOK WES TO TOMOTO!
Allis-Chal., com. 24 - 28 % Allis-Chal., pref. 83 % - 85
Am. British, com 8 Am. Can, com 42%- 48%
Am. Can, pref105 -105 %
Am Can & Edv
com 671/2 711/
Am. Car & Fdy., com 67½ - 71¼ Am. Loco., com. 66½ - 71
Am Dad oom 9891/-984
Am. Rad., com
Am Ship com 701/4 - 771/6
Am. Steel Edries, 60 - 65 1/6
Bald. Loco., com. 55% - 60%
Bald. Loco., pref 100 1/4
Beth. Steel, com 131 -139
Beth. Steel, class B 122 % -132
class B122 % -132
Beth. Steel, pref120 -121
Cambria Steel113
Carbon Stl., com 95 - 96
Central Fdry.,
com 24 - 26 Central Fdry., pref
Central Fdry.,
pref 44 - 45
Charcoal Iron, com 7½- 9
com 7½- 9
Charcoal Iron
pref 6 %
Chic. Pneu. Tool 68
Colo. Fuel 48% - 531/2
Cruc. Steel, com. 66 4 - 71 % Cruc. Steel, pref. 107 -110
Cruc. Steel, pref. 107 -110
Driggs-Seabury . 68 - 72
Gen. Electric 154 % -159 %
Gt. No. Ore Cert. 31 - 34% Gulf States Steel. 121 -125%
Guit States Steel. 121 -125 %
Gulf States Steel,
1st pref

Total Transport T
Int. Har. of N. J.,
com112 -11434
Int. Har. Corp.,
com 75 - 79 Int. Har. Corp.,
Int. Har. Corp.,
pref
pref
Lake Sup. Corp 18 - 20 1/4
Lima Loco, 55
Lukens, com 40
Lukens, 1st pref 101 1/2 - 102
Midvale Steel 56% - 62%
NatAcme 321/2- 33 %
Nat. En. & Stm.,
com 31 - 351/2
Nat. En. & Stm.,
pref 95 - 98
N. Y. Air Brake. 138 -14746
Nova Scotia Steel 93 - 95
Pressed Stl., com. 72 - 76
Ry. Steel Spring,
com 48 - 52 %
Republic, com 81 - 86 1/2
Republic, pref101%-104
Sloss, com 501/2 - 551/4
Sloss, pref 93
Superior Steel 38 - 49%
Superior Steel,
1st pref 99½-100
Transue-Williams 431/2- 44%
Un. Alloy Steel 41 1/2 - 45 3/8
U. S. Pipe, com., 1932 - 22
U. S. Steel, com., 116 % -127 %
Ist pref
Va. I. C. & Coke. 68 - 71
Westing, Elec 48 - 54%

#### United Shoe Earnings

The report of the United Shoe Machinery Company for the year ended Feb. 28, 1917, shows earnings of \$8,174,452, which compare with \$6,138,433 in the pre-vious year and \$4,861,092 for the year ended Feb. 28, After dividends on the preferred stock, the balance for the common was \$6.02 per share compared with \$4.40 and \$3.75 per share respectively in two previous years. The total surplus for 1917 is \$27,109,966, including \$10,902,605 resulting from revaluation of stock of subsidiary companies as of March 1, 1916. The report states that this item has been carried at less than actual value.

#### An Ore Road's Earnings

The report of the Duluth, Missabe & Northern Railway Company for the year ended Dec. 31, 1916, shows

a rapid increase in earnings which come very largely from the transportation of iron ore from the Lake Superior mines to docks. The statement for four years is as follows:

Total op. rev., \$1	1916	1915 \$9,909,549	1914 \$4,999,184	1913
Net aft. tax Other income .	7,823,688 209,596	5,523,946 187,700	1,372,020 111,761	\$8,787,953 4,246,662 150,732
Gross income Sur. aft. chg.*. Dividends	8,033,284 6,862,169 4,112,500	5,711,647 4,670,513 3,084,375	1,483,781 811,583 411,250	1,397,395 3,278,212
Surplus	2,749,669	1,586,138	400,333	1,084,375 193,837

\*Equivalent to \$166.86 a share earned on 41,125 shares of capital stock, against \$113.56 a share earned in 1915.

#### Philadelphia Company Report

The thirty-third annual report to the stockholders of the Philadelphia Company, for the year ending March 31, has been issued. It shows gross revenues of \$9,210,148.17 and a net income of \$3,385,417.23. Out of the net income dividends amounting to \$3,005,-771.81 were paid. The companies comprising the natural gas department drilled 295 wells and purchased 18 wells during the year. Of the wells drilled, 236 were productive. Seventy-six wells ceased to be productive and were abandoned. The Philadelphia Company is a supplier of natural gas for domestic and manufacturing purposes in Pittsburgh and also owns and operates the Duquesne Light Company, the Pittsburgh Railways Company and the People's Natural Gas & Pipeage Company.

#### Industrial Finances

Stockholders of the Trussed Concrete Steel Company, Youngstown, Ohio, have approved an increase of \$500,000 in the preferred stock. Present stockholders have the right to subscribe at par until June 1, and the proceeds will be used by the company in making large plant extensions. Of the present stock, \$2,000,000 is common, and \$1,000,000, 7 per cent cumulative preferred.

#### Dividends

The Cambria Steel Company, quarterly, 75c. and extra 75c., payable June 15.

The J. I. Case Threshing Machine Company, quarterly, 1½ per cent on the preferred, payable July 1.

The Crucible Steel Company of America, quarterly, 1½ per cent on the preferred and extra 4 per cent on account of accumulated dividends, both payable June 30.

The Driggs-Seabury Ordnance Company, 1½ per cent on the common, 1¾ per cent on the first preferred and 1½ per cent on the second preferred, all payable June 15.

The Gulf States Steel Company, quarterly, 2 per cent and extra 1 per cent on the common, quarterly 1¾ per cent on the first preferred and 1½ per cent on the second preferred, all payable July 2.

the first preferred and 1½ per cent on the second partial payable July 2.

The Harbison-Walker Refractories Company, quarterly, 1½ per cent on the common, payable June 1, and extra 6 per cent on the common, payable May 29.

The Moline Plow Company, quarterly, 1¾ per cent on the first preferred and 1½ on the second preferred, both payable than 1

The Republic Iron & Steel Company, quarterly, 1½ per cent on the common, payable Aug. 1, and 1% per cent on the preferred, payable July 2.

The United States Cast Iron Pipe & Foundry Company, quarterly, 1% per cent on the preferred, payable June 15.

The Youngstown Chemists' Club held its last meeting of the season Wednesday evening, May 16. Following the usual dinner, F. E. Dodge, chief chemist The Barrett Company, New York, discussed "The Benzol Situation" informally, while H. E. Whitfeld, professor of engineering, University of Western Australia and now British inspector of materials at Pittsburgh, spoke on "British Methods of Testing Munitions" and W. C. Anderson, chief chemist American High Explosive Company, New Castle, Pa., on "Chemistry of High Explosives."

The Penn Metal Company, 201 Devonshire Street, Boston, recently elected the following officers: George A. Sagendorph, president; George Taylor, treasurer; James P. Dolan, secretary, and Francis M. Johnson, vice-president. The vice-president is located at the company's New York office, 559 West Thirty-sixth

# PERSONAL

E F. Burchard has been appointed chief of the new section of the geology of iron and steel alloy metals which has been established by the directors of the United States Geological Survey to cover all geologic investigations of the ores of those metals. G. F. Loughlin will assist Mr. Burchard in the administration of the non-metallic section of the division of mineral resources as geologist acting in charge.

F. Quattrone, chief engineer of the Italian State Railways, returned to the United States a few days ago. Mr. Quattrone, who is well known in New York, arrived there during the early months of the war as the head of the Italian State Railway Commission and the representative of the Ministry of Agriculture. He placed large contracts for locomotives, cars and other railway materials and purchased and shipped large supplies for the Italian Agricultural Department as well. He left his post in New York last September, to become a member of the International Food Commission of London and to act as representative in that city for Mr. Bianchi, the Italian coal controller. Mr. Quattrone returns now to the United States as a special delegate of the Italian State Railways, to be attached to the Italian Embassy at Washington, and will have in charge the purchase and shipment of all materials to be contracted for by the Italian Government.

Keith R. Rodney, for many years connected with the Midvale Steel Company, and for the past two years supervisor of heat treating for the Winchester Repeating Arms Company, New Haven, has recently joined the staff of the Bullard Machine Tool Company, Bridgeport, Conn., as metallurgist and advisor in the selection and treatment of steels.

James H. Morris, who has been auditor of the William Tod Company, Youngstown, Ohio, has just been made assistant auditor of the Brier Hill Steel Co., that city.

J. R. Stroh has been made assistant general manager of the mining and transportation department of the Brier Hill Steel Company, Youngstown, Ohio, to which city he went from St. Louis five years ago.

Oscar U. Cook, for some years chief inspector at the upper and lower mills of the Carnegie Steel Company, Youngstown, Ohio, has been appointed metallurgical engineer for the Tennessee Coal, Iron & Railway Company, Birmingham, Ala.

B. G. Prytz, president of the S. K. F. Ball Bearing Company, Hartford, Conn., has been elected president of the Hess Bright Ball Bearing Company, Philadelphia, Pa.

William E. Hayes, Hartford, Conn., who left the employ of the Pratt & Whitney Company nine years ago to take a position in the Washington Navy Yard and was afterward transferred to a high technical position in the navy department, has been named a superintendent of the Government armor plate plant to be erected at Charlestown, W. Va.

A. J. Johnston of the Chicago office of Hickman, Williams & Co., about June 1 will take charge of the Birmingham office of the company to fill the vacancy caused by the enlistment of Charles Day in the Officers' Reserve Corps.

Walter Brunswick, formerly connected with the sales department of the American Locomotive Company, has been appointed engineer in charge of the engineering department of the export house of Dowler, Forbes & Co., 21 South William Street, New York.

William H. Blount, until recently chief draftsman of Sleeper & Hartley, Inc., Worcester, Mass., has been appointed superintendent of the company's plant No. 1, on Prescott Street, Worcester.

A. E. Patterson, who for the past 15 years has been sales manager of the Massey Harris Company, Toronto, in Australia, has been elected sales manager for the firm in Canada. Lieut-Col. Vincent Massey has also

been elected to the board of directors of the Massey Harris Company, Toronto.

Joseph F. Guffy of Pittsburgh was re-elected president of the National Gas Association of America, at its convention held in Buffalo last week.

Homer D. Williams, president of the Carnegie Steel Company, Pittsburgh, is in Idaho on a hunting trip. He will return about June 10.

Stanley L. Rau has been appointed sub-agent for the Asbestos Protected Metal Company, Pittsburgh. His headquarters will be in the Powers Theater Building, Grand Rapids, Mich., and his territory consists of Grand Rapids and the surrounding towns.

Guy R. Merrill, formerly in the sales department of the Boston office of the Vanadium Alloy Steel Company, Pittsburgh, has been transferred to the New York office, George Nash Company, 304 Hudson Street, and has been given the title of export manager. Mr. Merrill will look after foreign sales and shipments of the Vanadium Alloy Steel Company.

Robert Radford, secretary and assistant treasurer of the Standard Steel Works Company, Philadelphia, has been elected recently president of the Southwark Foundry & Machine Company of that city. The new position does not involve any change in his official connection or duties with the Standard Steel Works Company.

Capt. Elmer K. Hiles has been called into active service of the Fifth Engineers Regiment and has reported for duty. Captain Hiles is secretary of the Engineers' Society of Western Pennsylvania and began training for the service last summer at Plattsburg, N. Y., where he made a splendid record.

A. N. Flora, sales manager of the Trumbull Steel Company, Warren, Ohio, has been elected a director of the company, succeeding E. W. Kerr, who resigned because he has purchased the interest of the Trumbull Steel Company in the Fort Smith Spelter Company.

A. R. Topping has been elected secretary of the Walter A. Zelnicker Supply Company, with which he has been associated for 11 years.

John E. Perry, assistant to the president of the Youngstown Sheet & Tube Company, Youngstown, Ohio, has been elected president of Wharton Steel Company, Philadelphia, succeeding H. S. Endsley, temporary president. Mr. Perry takes office June 1. Mr. Endsley will continue as counsel of the company.

### Topping and Perkins Will Speak at Institute Banquet

Indications point to an attendance of fully 700 members for the twelfth annual meeting of the American Iron and Steel Institute to be held at the Waldorf-Astoria Friday and Saturday of this week. At the banquet Friday evening, John A. Topping, chairman of the Republic Iron & Steel Company, will speak on "Co-operation and Mobilization of Public Sentiment," and George W. Perkins on the "Man of the Future." There will also be a number of impromptu responses.

At the sessions Friday morning and afternoon the papers heretofore announced will be discussed as follows: Richard H. Rice's paper on "Recent Installations of Large Turbo Generators," by Dr. David S. Jacobus, advisory engineer of the Babcock & Wilcox Company, New York, and Alexander Dow, president Detroit Edison Company, Detroit; the paper by Robert P. Lamont, president American Steel Foundries, on the "Manufacture of Steel Castings," by R. F. Flintermann, president Michigan Steel Castings Company, Detroit, and S. P. Bush, president Buckeye Steel Casting Company, Columbus, Ohio; the paper by John Lyman Cox, engineer Midvale Steel Company, Philadelphia, on "Relative Merits of Forming Steel by Pressing, Hammering or Rolling," by E. O'Connor Acker, Bethlehem Steel Company, South Bethlehem, Pa., and the paper by Walther Mathesius, superintendent blast furnaces Illinois Steel Company, South Chicago, Ill., on the "Chemical Reactions of Iron Smelting," by H. P. Howland, superintendent blast furnaces Wisconsin Steel Company, South Chicago, Ill.

# Machine-Tool Builders at Cincinnati

War Questions of Labor, Manufacture and Taxation Almost the Sole Topics of Addresses and Discussions

CINCINNATI, May 21-The present day high cost of materials and labor entering into the making of machine tools was made the special subject of the opening session of the meeting now in session at the Hotel Sinton of the National Machine Tool Builders' Association. Special addresses were made on pig iron, steel, lumber, supplies and labor. These in a measure constituted briefs to prove the just bases of the prices and were calculated to indicate an upward trend or at least an indefinite continuing of present levels dependent on

duration of the war.

James Albert Green, president Matthew Addy & Co., discussed pig iron and incidentally well maintained a reputation as an orator. He outlined the price and production figures of the iron trade over the long periods when profits were negative and urged that while they were now on the right side, the buyers of iron were prospering fully as much if not indeed more so. this year iron output, he said, will total some 41,000,000 tons, it will be insufficient to fill present needs, and he predicted that there would be a further shortage as the year progresses. As to the cost of making pig iron, Mr. Green gave figures which showed in some cases there was an increase of 75 per cent over prevailing costs a year ago at this time and over 100 per cent as compared to those of 1914. He referred to the difficulty at the present time of being able to make prompt shipments and brought a volume of applause when he said the railroads had been starved for 10 years by the farmers of the West and petty politicians in Wash-

#### Steel Is Discussed

The subject of steel was taken by Royal Mattice, Cincinnati manager American Steel & Wire Company and an adjutant of the First Regiment of Cincinnati. The law of supply and demand, he said, governed and will govern until the end of time. To-day the demand is greater than the supply. Roughly, he said, the demand is 50 per cent greater than the supply. A great many have thought that most of our steel production was going.abroad, but only 71/2 per cent was exported for war purposes. At the time the great demand from abroad appeared, the domestic demand took a consider able jump and it has been increasing steadily until to-day the manufacturers of steel and iron are at their wits' end, not to sell that which is produced, but to distribute the production in a sane, sensible and equitable manner. It is our duty to-day to try and keep every plant producing, because when we shut down a plant on account of lack of steel, we curtail the purchasing power of this nation just so much.

"The item of labor consumes by far the greater portion of any firm's income," he continued. "We have advanced labor 46 per cent in 22 months. Sulphuric acid is a very important item in the manufacture of steel, and prices in two years have gone from \$8 per ton nominal to \$35 per ton nominal, and about nine months or one year ago we paid as high as \$60 per ton. Coal has advanced from \$1.05 and \$1.25 to \$5.50 per ton. Coke has advanced from \$1.75 to \$9 per ton. Oil has advanced about 30 per cent. Waste, 200 per cent. Pig iron has jumped from \$18 per ton to \$42 per ton. We have sold as much as we dare sell for 1918 and consumers are knocking at our doors for 1919-1920, leaving prices to be charged entirely to us."

#### Pushing Blast Furnaces

As indicating the likelihood of repeated dislocations of shipping schedules, he called attention to the fact that many blast furnaces are running at 10 to 27 per cent above capacity, a condition which cannot be maintained indefinitely. He noted a new condition in the scrap market. Many small concerns are making locally automobile and farm implement castings, with the result that there is a considerable number of new customers of scrap collectors. This fact is strengthening

the scrap market.

William J. Radcliffe, president E. A. Kinsey Company. Cincinnati, discussed supplies, mentioning chiefly the differences in prices now and late in 1914. vance in twist drills was 200 to 250 per cent. Makers of such commodities as drop forge wrenches, lathe dogs and the like had been slow to raise prices and these varied when they came 10 and 20 per cent, and the total for the war period ranges between 33 1/3 and 50 per cent. Files have advanced from 30 to 40 per cent; some brands are substantially unobtainable; the genuine Swiss is practically off the market, and the American Swiss design can be obtained in only three to five months. He paid special tribute to the makers of grinding wheels, which had been so greatly improved in constancy of standard and capacity of metal removing that the use of many alloy steels would otherwise not have been possible and production in the 24 or 30 months had been increased 300 to 400 per cent. The price advance was 20 to 25 per cent.

#### Labor and War Costs

The subject of labor as an element of cost was discussed by Murray Shipley, Lodge & Shipley Machine Tool Company and first vice-president National Metal Trades Association. He touched briefly on the fact that wage advances thus far have not been made because of labor scarcity, the war having as yet withdrawn no labor from industry; that it is a psychological effect of war for everyone to charge more for what he sells, but that commodity prices may not last through the summer, though per capita wages move only upward. He dwelt on the desirability of teaching thrift, now much needed. He was prepared to agree that Chinese labor should be admitted to help till farm lands

He quoted from a letter from W. H. Van Dervoort, of the Commission on Standards and Gages in Washington, and president of the National Machine Tool Build-Association, that there are 10,000,000 to 12,000,000 men between 21 and 30 years of age in the country. Thus for the raising of the first 500,000 men, one man out of 20 or 25 will be liable to the draft. There will be 10 days, it is understood, between notification of draft and reporting for duty and this will give time for employers to make formal requisition for men to be returned to employment essential to Government needs. As to organized labor the brand of patriotism offered, he said, hardly appeals to those familiar with the conditions; it is reported, he continued, that they desire a guarantee that top wages of to-day shall be maintained and that union labor shall interpret its own rights and the Government enforce them and that it shall largely dictate the amount of profit which industries shall be allowed to make.

#### Lessons from Great Britain

What we may learn from Great Britain in the conduct of war might well have been named as the title of a notable address made at the Monday afternoon session by William Hard, who was introduced as an investigator and contributor to the Metropolitan Magazine. He had been an observer of conditions in England over about six months ending February. He deplored by inference the conditions in Washington by which a civilian inespert department head of a limited tenure of office has the say on the operations of the army or of the navy-He outlined in contrast the working of the Admiralty Board and the civilian organization of design, purchase and delivery of munitions and supplies asked for by the

war experts. He suggested the possibility of a department of munitions or at least more authority for those in committee work now engaged in Washington in the war preparations. Incidentally he mentioned very favorably in this connection the part being taken by Frank A. Scott in the General Munitions Board.

In respect to the tax legislation, he urged that more consideration be given to the British basis, which does not, for example, impose a transportation tax at every stage in manufacture, and has few taxes on imports or on articles of clothing or eating. With the profits for the year before the war as a basis, the additional profit earned in a year since the war is called the excess profit, and 60 per cent of this excess has been taken as the tax and in the future it will be 80 per cent. After this comes the income tax, about an average of 25 per cent, and what with local taxes all of one-half of incomes have been taken by the Government. The point emphasized is that such a system does not undermine a business and no burden is put on a business which is not making money.

Mr. Hard told of the workings of the controlled establishments, so-called, which under rulings of the Ministry of Munitions turn out products in the order laid down but are not commandeered in the ordinary sense of the term. The smaller concerns have been forced to learn to use modern machines and to experience the high outputs which had hitherto not generally been obtained. He advised manufacturers to make classifications of employees against the selective draft, thus to be prepared in offering arguments, if necessary, on the indispensableness of employees who should be exempted from war field service.

#### Business After the War

As to the state of business after the war, British sentiment, he said, is that business will continue good for a great many years. Great Britain is developing tin and rubber resources which had been untouched if not unknown; attention will be focussed on industrial developments of Africa. Canada and Australia; Russia is referred to as on the threshold of great industrial expansion, and much is expected of the next 20 years in China, which has had its political revolution as well as Russia. And all this, he emphasized, on top of the need of rehabilitating the way devestated regions.

of rehabilitating the war devastated regions.

The speaker believes the patriotism of the so-called laboring classes in Great Britain to be of the very highest order, however slow it may have been in growing, though this he suggested was quicker than generally understood in this country. He laid great stress on the concessions which had brought about the war council. As showing by its personnel the unanimity of all classes in the pursuit of the war or what divergent types are working successfully together, he said Lloyd George could be likened to Raymond Robbins of Chicago or the late Tom Johnson of Cleveland; that for Lord Curzon could be substituted Elihu Root; for Lord Milner, a personality and executive like George W. Goethals; for Bonar Law, a man like Murray Crane of Massachusetts, a business success before entering the political arena, and for Arthur Henderson, Samuel Gompers or Victor Berger.

Mr. Hard told how there are committees of business men in London like there are in Washington, and it has come that the line between public and private life has been obliterated, maybe forever. A committee of shipowners, for example, speaks to the Government, as to where and how many ships should be built, how they should be used, where they should go, etc., acting so to speak as a steering committee. He expressed the hope that the committees in Washington might continue after the war with every different element—university men, business men and organized labor—represented. The manufacturer must break out from the chrysalis of private life and come into his rightful place in the community and for his industry, with permanent representation at Washington.

#### Standardized Protection Devices

An address on the matter of standardization of machine-tool protection devices was made by H. W. Dunbar, chief engineer Norton Grinding Company, Worces-

ter, Mass. As chairman of the association's committee on grinding machines, he emphasized the desirability of co-operation with State labor boards to get approval of safety devices, thus securing proper casualty insurance recognition, and thus also nullifying sporadic undesirable and ill-advised efforts to employ devices of amateurs. The Underwriters' Laboratories, Chicago, as yet gave no promise of admitting manufacturers' representatives to their councils, and this act is calculated to discourage initiative and originality.

A committee report urging the adoption of trade acceptances under the Federal Reserve Act was made by Z. Chafee, Diamond Machine Company, and W. A. Viall, Brown & Sharpe Mfg. Company, Providence, and F. A. Halsey told the association about the spread of the advocacy of the metric system, and urging further active participation by the members in the anti-metric organization, the American Institute of Weights and Measures, 20 Vesey Street, New York.

#### To Canvass Machine Tool Possibilities in South America

Dr. Robert Grimshaw, who was lately identified with New York University, and for 20 years resided in Germany, part of that time as consulting engineer for the Bavarian Government, is to address the meeting tomorrow, Tuesday, regarding his appointment as a special agent for the Department of Commerce. He is to make a circuit of South American countries, except the Guianas, taking perhaps 18 months, to ascertain the kind and size of the demand for machine tools, and if possible to discover products which may be purchased, thus to develop a trade both ways. Meanwhile, he is making a census of the machine-tool business of this country from the exporting standpoint.

#### Large Orders for Locomotives

More orders for locomotives have been placed in the last week than in any week in many months. Including the construction of 275 new locomotives constituting the 1918 program of the Pennsylvania Railroad involving the expenditure of \$14,200,000, there have been placed in the last week orders for 494 locomotives. Pennsylvania Railroad order of 275 will consist of 169 for replacements and 106 for additions to the motive power equipment of the lines east. The Baldwin Loco-motive Works will build 30 of these locomotives, while the railroad itself will construct 245 at its Altoona shops. The Baldwin Locomotive Works will furnish 100 locomotives to the Great Northern, which is in addition to the 25 reported a week ago. The same company will also furnish 65 locomotives to the Chicago, Burlington & Quincy and 10 to Nashville, Chattanooga & St. Louis. The Northern Pacific has ordered 40 Mikado locomotives from the American Locomotive Company. The New York Central is inquiring for 255 locomotives for delivery in 1918. Including the large Pennsylvania order referred to, orders in May up to May 19 inclusive amount to 677, bringing the total for the year to that date to 2354, of which 541 are for export. larger number than was ordered in all of 1915, and at the present rate the orders for 1917 will double those for 1916, which were 5750.

#### Will Meet in Worcester

Calvin W. Rice, secretary of the American Society of Mechanical Engineers, has announced that the society will hold its annual spring meeting at the Bancroft Hotel, Worcester, Mass., in honor of the president of the society, Dr. Ira N. Hollis, president of Worcester Polytechnic Institute.

The second stack of the Indiana Steel Company's group of four blast furnaces at Gary, Ind., is expected to go into blast in about 25 days. The first of the four to be completed was blown in April 14.

The Republic Iron & Steel Company expects to get its No. 5 Bessemer furnace at Haselton in operation by June 15. The machinery has nearly all been installed.

# War Tax Bill Is to Be Rewritten

Business Has More Assurance That Bond Issue Will Be Larger and Current Taxes Less — Tariff Increase Opposed

WASHINGTON, May 22, 1917.-That the Treasury Department and the Ways and Means Committee have blundered in seeking to raise so much as one-half the cost of the war from increased current taxation and the remainder by bond issues, is a conviction that is forcing itself upon the conservative members of both House and Senate. Whether this view will prevail to such an extent as to affect the total amount to be raised by the pending war revenue bill or will influence Congress to make radical changes in the method of its construction remains to be seen. There is no doubt, however, that the general apathy of the public with respect to the so-called "Liberty loan" is due chiefly to uncertainty regarding the effect of the provisions of the revenue bill and that a very strong reaction against the principles upon which the bill is based has set in, with a fair prospect that the Senate Committee will reject some of the most radical features of the House project.

#### Too Much "Pay-As-You-Enter"

The proposition that the war should be conducted on a "pay-as-you-enter" basis dates back many months when President Wilson coined this engaging phrase long before reliable estimates of the huge amounts to be required for the national defense were available. When the Secretary of the Treasury called upon the Ways and Means Committee to raise \$1,800,000,000 in a single measure, he reiterated the President's suggestion to the extent of insisting that Congress should raise by taxation at least one-half the cost of carrying on the The Ways and Means leaders were strongly disposed at the outset to pursue a policy that would guarantee the business of the country against unnecessary disturbance; but, as the formulation of the revenue bill proceeded and the difficulties of the problem increased, they became panic stricken and added item after item taxing special industries and levying vexatious imposts upon routine business until finally, on the day before the bill was reported to the House, they adopted the absurd expedient of attempting to raise \$250,000,000 by an additional ad valorem duty of 10 per cent on all imported merchandise whether now free or dutiable.

#### **Taxation Overdone**

During the ten days in which the revenue bill has been under discussion in the House many members have protested against the proportion of the cost of the war which it is proposed to raise by taxation. Even members of the Ways and Means Committee, though bound by agreement to vote for the bill, have objected to many of its provisions on the double ground that as the bulk of this money will not be required for several months the legislation is premature and that in no event should so large a proportion of the cost

of the war be met by current taxation.

Into the midst of this debate the Secretary of the Treasury, during the past week, hurled a bomb in the form of a supplemental estimate calling for more than \$400,000,000 additional, making the total amount which he desires to have raised by taxation approximately \$2,250,000,000. The Ways and Means leaders, wholly unprepared for this new development, summoned a hasty conference and after a spirited discussion decided not to recommend to the House any further taxation to raise the additional sum desired by the Secretary of the Treasury, but to leave it to the Senate Finance Committee to increase the revenue producing capacity of the bill if it should decide that it is necessary to do so. With this understanding debate on the bill was resumed.

#### Senate May Reduce Taxes

The Senate Finance Committee, which began consideration of the revenue bill on the 18th instant without waiting for its passage by the House, instead of seeking additional sources of revenue, is reported to be considering the propriety of reducing the total to be raised by the bill to \$1,400,000,000, eliminating for this purpose the proposed tariff duties and reduc. ing or abandoning certain direct taxes on special industries. It can be stated positively that the proposition to make the measure more moderate, both as to the amount to be secured and as to the elimination of certain particularly obnoxious features, is steadily gain-

ing ground.

Senators on both sides of the chamber are studying with interest certain data recently submitted to the Finance Committee with regard to the taxation policies of the warring nations of Europe as compared with that embodied in the House revenue bill. It is found that no European country has financed its war operations by increased taxation to the extent of more than 25 per cent. Great Britain is the only country that has reached this limit. France has paid only 18 per cent of her expenses by taxation, Italy about 15 per cent, Cermany between 10 and 12 per cent, while Russia has relied almost exclusively upon loans to meet the cost of her military operations. There are, of course, reasons why the governments of the European countries referred to have deemed it inadvisable to burden their people currently with taxes in excess of the limits quoted and it is also true that the people of the United States are in position to contribute without serious inconvenience more than 25 per cent of the cost of the war. There would appear to be no good reason, however, why the business of the country should be more or less demoralized and the success of the war loans imperiled by an attempt to secure by taxation fully 50 per cent of our war expenditures for no purpose other than to enable us to realize an ideal of no practical value.

Senators who are suggesting that the limit of taxation be fixed at not to exceed one-third the current extraordinary expenditures call attention to the fact that in 50 years the population of the United States will probably approximate 250,000,000 and that even if twothirds of the expense of the war is paid by bond issues the burden upon posterity will be very small, especially if compared with the great benefits that will be derived as the result of a victorious war for the democratization of the world.

#### Why Liberty Loan Goes Slowly

That the subscriptions to the Liberty loan have been disappointingly small is an open secret here, although efforts are being made to conceal the real facts. It was recently announced at the Treasury Department that "owing to the difficulty of currently compiling accurate data" no further daily statements concerning the progress of the loan would be made. neously it was announced that Secretary of the Treasury McAdoo would immediately begin a tour of the West for the purpose of arousing interest in the loan. bureau of publicity has also been organized in the department with a considerable staff engaged in preparing and circulating press and advertising matter in the interest of the loan. It is the hope of the department that by the use of these methods the loan will be over-subscribed to such an extent as to have an important moral effect not only upon the people of this country but upon the Allies and upon the common enemy.

The fact can not be denied, however, that the failure of Congress to co-ordinate properly the provisions of the war revenue bill with the war loans has not only imperiled the Liberty loan but unless important changes are made in the revenue measure it will be exceedingly difficult to raise further loans and experienced bankers

are convinced that the rate of interest on future bond issues will have to be increased substantially. The Government is calling upon the men of wealth throughout the country to put their surplus income into the Liberty loan; but while these appeals are coming from the Treasury Department, Congress, in response to Secretary McAdoo's demands for more revenue by taxation, is raising corporate and individual income tax rates and in the case of the latter is proposing levies nothing short of confiscation. Under these circumstances it is not surprising that the war bonds have been slowly absorbed or that the business men of the country are urgently looking to the Senate Finance Committee to revise the House revenue bill in very important particulars.

As foreshadowed when the revenue bill was reported to the House, that body has made very few changes in the taxing provisions. The tax on incomes above \$40,000 has been increased and the 10 per cent tax on express receipts has been reduced to 8 per cent. The debate on the matter, however, has been largely perfunctory. It has been accepted on every hand that the Senate would make radical changes in the bill and that it would take final shape in conference.

#### Vigorous Opposition to Tariff Increases

Notwithstanding the fact that hearings before the Finance Committee closed last Wednesday, Chairman Simmons and his colleagues continue to be flooded with protests against the tariff provisions of the House bill. Nearly every manufacturing industry in the country is affected by the proposed war tax of 10 per cent ad valorem on both free and dutiable goods and many infuential business men have appealed to President Wilson, pointing out the danger to the business of the country of this slipshod and unscientific method of revising the tariff. The President's attention has been drawn especially to such anomalies as the proposed duty on pig tin and the projected tariff on hides and on beef and other foodstuffs of which there is a serious shortage in prospect. The President is understood to have been greatly impressed by these representations and he is counted upon to bring them sharply to the attention of the Congressional leaders.

The Finance Committee is in receipt of many letters and telegrams pointing out the danger of a fixed rate on both raw and dutiable articles. It is asserted that a flat ad valorem rate applied to both raw materials and finished products is neither scientifically nor practically compensatory, also that compensatory duties vary with each item of the tariff, depending upon percentage of labor, cost of raw material and conditions surrounding its production and many other factors peculiar to each individual industry.

Attention is also drawn to the fact that opportunities for gross frauds upon the revenue and for dis-criminations against honest importers, not to mention American producers of competing goods, would result from the imposition of an ad valorem tax upon articles liable to specific duties under existing tariff schedules. While the Underwood-Simmons law levies ad valorem rates wherever possible, the difficulty of determining the foreign market value as the basis of such rates is so great as to certain classes of merchandise that specific duties have been retained to prevent fraudulent undervaluation of invoices. The addition to the duties on such articles of a 10 per cent ad valorem surtax, it is claimed, would transfer a large part of the business of importing these articles to dishonest importers, who would be enabled to reap large profits through undervaluation and thus demoralize many important lines of trade.

Chairman Simmons, of the Senate Finance Committee, expresses the opinion that the revenue bill will be reported to the Senate about June 1. Its discussion in that body is likely to occupy two or three weeks and the Conference Committee to which it will then be sent will probably consume another week in harmonizing the varying provisions of the House and Senate drafts. It is believed, therefore, that the bill can hardly become a law before June 20 and possibly not before July 1.

# STEEL CASE TO BE RE-ARGUED

#### Other Anti-Trust Suits Put Over by Supreme Court

Washington, May 22, 1917.—The United States Supreme Court has called a halt in the anti-trust suits brought against the United States Steel Corporation and four other big concerns by assigning them for re-argument at the term beginning next October. The suits include those brought against the International Harvester Company, the United Shoe Machinery Company, the Lehigh Valley Railroad and the Reading Railroad.

In accordance with its invariable practice, the court has assigned no reasons for the action taken, but experienced members of the bar are of the opinion that the Chief Justice and his associates have taken account of the extraordinary industrial conditions now prevailing and are unwilling at the present time to decide or even consider the important issues underlying these cases. In some quarters it has been suggested that the court may be divided and hence that re-argument is desired; but this is regarded as improbable in view of the fact that the order for re-argument covers all these cases, the issues in which present great diversity. It is an interesting fact in this connection, however, that but seven of the nine judges sat in the Steel Corporation case, Justices McReynolds and Brandeis having been concerned in its preparation. This would make it possible for the opinion of the court to stand 4 to 3, in which event the decision would be rendered by a minority of the court, something highly undesirable if not unprecedented. Bearing all considerations in mind, it is the best opinion here that the action of the court with regard to all these cases is based solely upon its unwillingness to take any action at this time calculated to disturb the industries of the country. W. L. C.

# Donner-Union Coke Corporation Formed at Buffalo

The Donner-Union Coke Corporation, Buffalo, has filed incorporation papers with the Secretary of State at Albany, the directors named being William H. Donner, president of the Donner Steel Company; R. N. Donner; Frank B. Baird, president of the Buffalo Union Furnace Company; Harry Yates, first vice-president and treasurer of the Buffalo Union Furnace Company, and Frederick C. Slee, counsel for the Donner interests.

The new company is being incorporated with 5000 shares of common stock having no stated par value, and it is understood that the corporation is later to issue preferred stock and bonds as well as an assessment upon the shares of common stock that will cover the possible \$3,000,000 required to erect, equip and operate the extensive by-product coking plant planned.

A 50-acre site for the industry has already been purchased, located to the south of the Donner Steel Company's plant, and served by the South Buffalo Railroad; the Buffalo, Rochester & Pittsburgh; the Delaware, Lackawanna & Western and the Lake Shore Railroads. Direct access to the Buffalo River, by rail across the property of the Donner Steel Company, will also be provided.

The plans of the corporation provide for the erection of at least 120 by-product coke ovens of the most modern type, for the production of gas, coke, ammonia, tar and other products. The development of the company's plans may, however, be deferred until after the close of the war.

Rapid progress is being made by the Nagle Steel Company, Pottstown, Pa., in the remodeling and improvement of the former plant of the Potts Brothers Iron Company recently acquired. It is expected to place the plate mill as well as other departments of the plant in operation by the middle of June. The company is also planning for the early inauguration of operations at its Rahway, N. J., mill.

# Foreign Type Rifles and Artillery

Failure of Government to Co-operate with Private Manufacturers Is Responsible — Extent of Munitions Board's Control

Washington, May 22, 1917.—The Munitions Board has been busy during the past week developing a project for the substitution of the Enfield rifle, rechambered to use American ammunition, for the Springfield rifle, of which it will not be possible to secure a supply adequate for the equipment of the army soon to be raised. Frank A. Scott, chairman of the Munitions Board of the Council of National Defense, has made a personal survey of the existing small arms factories, and while the production of the Springfield rifle will be increased as rapidly as possible, the Enfield rifle will probably be used exclusively by any troops that may be sent to the theater of the war in Europe.

#### Private Works Could Have Made Rifles

The predicament in which the War Department finds itself with respect to the shortage of Springfield rifles is due wholly to the unwillingness of Congress to accept the recommendations of experienced ordnance officers, repeatedly made in the past two years, to provide equipment for private establishments to produce small arms and ammunition on United States army standards General Crozier, in particular, has repeatedly urged appropriations for the purchase of gages, jigs, dies, etc., to fit up private plants, but has encountered the organized opposition of pro-labor members of Congress who have insisted that all war material be made in the arsenals and that no private concern should be permitted to "make a profit out of war." The results of this short-sighted policy on the part of Congress are now fully realized. Although several small appropriations aggregating less than \$2,000,000 for the purchase of gages, jigs, etc., were made during the last Congress, they were not only wholly inadequate but at the time they became available the capacity of the gage makers of the country was entirely taken up by foreign con-At this late date, therefore, the War Department, finds itself in the humiliating position of being obliged to adopt as its chief small arm a foreign rifle because of the fact that the British Government has been enterprising enough to equip a considerable number of American manufacturers with the appliances necessary for its production. In discussing this situation, Mr. Scott, in an interview authorized by the Committee on Public Information, says:

#### Equipped for Enfield Riffes

"Manufacturing facilities for the Springfield rifle are not adequate to supply the number required for the larger force which the United States may decide to send abroad and to replace the wastage of such a force. Fortunately the existing small arms factories which have been turning out quantities of rifles for the British army are equipped to manufacture the Enfield rifle in more than sufficient number. Therefore it has been decided to adopt the Enfield rifle, but manufactured to use American ammunition, and to issue these rifles to our troops to such extent as may be necessary. Our Government will continue to manufacture the Springfield model, the ammunition for which will be interchangeable with that of the new Enfield.

"The United States is in a very satisfactory position so far as all types of ammunition are concerned. This country has developed during the past three years great plants for the manufacture of high explosives, small arms ammunition and field artillery ammunition of various types. This development has been so great that several of the belligerent nations have received the greater part of their supplies from us. New plants have been developed in the interior of the country, where they are safe from any raiding parties that

might land upon the coast. The supply will be such that the United States can take advantage of it."

#### Increased Output of Field Artillery

The War Department must also rely upon preparations heretofore made by the Allies to secure an adequate supply of field artillery. In this connection Mr. Scott says:

"Steps are being taken to provide for the additional quantities of field artillery necessary for modern battle conditions through the extension of plants already in operation for the Allies, and through the introduction and adaptation of new plants that have not hitherto manufactured war material. The process will be slower than that of providing rifles, but this country has been noted for its machine tools, an industry which has been developed beyond that of any other nation, and this is proving a decided asset in these days of preparation for a great war and will help us to make good a shortage which is greater than it should be. The General Munitions Board is endeavoring to develop these various resources to the fullest capacity in order that the country may be prepared for any developments of the military situation, no matter how serious they may prove.

"In order to secure the great quantities of artillery immediately necessary for the large armies that are to be raised, a certain number of guns of tried foreign types, but manufactured in the United States, will be introduced into our service. Satisfactory arrangements have been made to accomplish this. In the meantime the munitions plants are pushing forward their preparations for the manufacture in large quantities of the various types of mobile artillery that have been adopted for our own service. Among these types is the 3-in. light artillery gun, of which the latest model is said to be even superior to the famous French 78.

#### Powers of the Munitions Board

In view of the criticisms of the Council of National Defense and the Advisory Committee, which have recently been made in and out of Congress, and especially because of charges that officials whose positions are not provided for by law have been expending enormous sums upon their own discretion and authority, the Committee on Public Information makes the following official statement regarding the functions of the General Munitions Board:

"The General Munitions Board of the Council of National Defense, of which Mr. Scott is chairman, is made up of a group of seven representatives of the army, eight of the navy, and four members of the Advisory Committee of the Council of National Defense. Its purpose, as outlined in a resolution creating it adopted by the council, is to co-ordinate the buying of the several departments; assist in the acquirement of raw materials and manufacturing facilities, and establish precedence of orders.

"The board has no authority to issue purchase orders, make contracts or bind the Government in its purchases. All these functions are performed, as heretofore, by the several departments. The chairman of the board, however, has authority to require, when necessary, that conflicting purchases be not made until they have been submitted to the Secretary of War or the Secretary of the Navy, as the case may be, with a full statement of the facts. Broadly stated, it is the function of the board to ascertain the needs of the departments and exercise general advisory supervision over the terms of the contracts, with a view to establishing a general purchasing policy for the military arms of the Government as a whole."

#### Contracts for Submarines and Destroyers

The Navy Department announces that the Electric Boat Company, 11 Pine Street, New York, has been awarded contracts for 24 submarines on a cost plus 10 per cent profit basis, the Navy Department agreeing to secure the necessary steel plates and shapes. The company's proposal opened at the Department on April 11 offered to build these boats at \$1,524,000 each, if constructed on the Atlantic coast, and \$1,592,000 if built on the Pacific coast.

The Department has also awarded a contract to the Lake Torpedo Boat Company Bridgeport, Conn., for four boats at cost plus 10 per cent. Contracts for 10 of the 38 submarines for which proposals were received on April 11 remain to be awarded. Other bidders were the California Shipbuilding Company, Long Beach, Cal., which offered to construct boats on a cost plus profit basis, and Schneider & Co. of France, which proposed to license the Navy Department to build submarines on its patented designs for \$65,000 for the first vessel, and \$45,000 for each succeeding vessel.

The Newport News Shipbuilding & Dry Dock Company has been awarded an emergency contract for the construction of six torpedo boat destroyers at approximately \$1,250,000 each. These vessels will be paid for out of the special fund appropriated by Congress to enlarge the Navy and expedite the construction of warships, which was voted immediately after the declaration of war with Germany.

#### A Copper Sub-Committee

The Council of National Defense announces the formation of a sub-committee on copper to work with the committee on raw materials of the Advisory Commission of which Bernard M. Baruch is chairman. This sub-committee is as follows: Murray Guggenheim, M. Guggenheim's Sons, New York; R. L. Agassiz, president Calumet & Hecla Mining Company, Boston; Charles McNeil, president Utah Copper Company, New York; James McClean, vice-president Phelps-Dodge Company, New York, and W. A. Clark, president United Verde Copper Company, New York.

No official announcement has yet been made with regard to the confirmation of the committee on pig iron, iron ore and transportation, the tentative membership of which was prematurely given out from Pittsburgh last week.

#### Joint Buying for Government and Allies

Extended conferences took place yesterday between J. P. Morgan, Mr. Balfour, head of the British Mission, and Acting Secretary of the Treasury Crosby, concerning the details of the agreement for the appointment of a purchasing commission to buy war material in this country for the Allies and for the United States Government. Mr. Morgan's firm, which has purchased several billion dollars' worth of supplies for the Allies, has perfected an excellent organization for the purpose, and has agreed to transfer a part of it to the American commission, including a dozen expert buyers thoroughly familiar with the principal classes of goods to be purchased. It is expected that the agreement for the appointment of a commission will be concluded within five or six weeks and that the commission will begin its work early in the new fiscal year. It is estimated that the volume of its purchases will approximate eight billion dollars per annum. W. L. C.

# The Fabricators' Committee to Help the Government

The special committee of members of the Bridge Builders and Structural Society appointed to co-operate with the Government to secure the facilities of the fabricating plants of the country for Government necessities, the appointment of which committee was noted in last week's issue, is as follows: John Sterling Deans, Phoenix Bridge Company, chairman, Phoenix-ville, Pa.; C. D. Marshall, McClintic-Marshall Company, Pittsburgh; C. E. Michael, Virginia Bridge & Iron Company, Roanoke, Va.; George T. Horton, Chicago Bridge & Iron Works, Chicago; Harry Fuller, King Bridge Company, Cleveland, and L. R. Gifford, Stupp Brothers Bridge & Iron Company, St. Louis.

### OBITUARY

WALTER B. PEARSON, president of the Standard Screw Company, Chicago, died May 19, at his home in Chicago, aged 55 years. He was born in Virginia, but his early boyhood was spent in Wisconsin. He completed his education in the University of Wisconsin, where he specialized in mechanics. After leaving the University he went to Cleveland and was employed by the Warner & Swasey Company. After leaving that company he specialized for several years in engine work and automatic invention and construction. He organized the Pearson Machine Company. In 1900 that company was acquired by the Standard Screw Company, and in 1901 Mr. Pearson became a director of the latter company and was made vice-president. In 1904 he was elected president to succeed C. E. Roberts. Under Mr. Pearson's able management the Standard Screw Company grew in strength and importance. In 1905 the Hartford Machine Screw Company and the Western Automatic Machine Screw Company were acquired by the Standard Screw Company, and later the Walker & Ehrman Mfg. Company in Chicago. With the acquisition of these important properties Mr. Pearson found himself in a field for which he was pre-eminently fitted and for twelve years he labored incessantly for the upbuilding of the company. The company's normal business was the manufacture of automatic machinery and machine tools and screws of all descriptions made on automatic machinery. When the war started, the company obtained large orders for shrapnel time fuses, in the manufacture of which the company's equipment was suited. Practically all of the company's fuse output was contracted for by the Bethlehem Steel Corpora-

JOHN P. EDWARDS, one of the pioneers of the American iron and steel business, who died at his home in Los Angeles, Cal., April 7, at the age of 72 years, was one of the best-known men in the country during the earlier stages of the industries, and until recently was actively engaged in his work. In his younger days Mr. Edwards was closely associated with Capt. William Jones, and until the latter's death their work was closely identified. During Mr. Edwards' incumbency of the general superintendency of the Cleveland Rolling Mill Company, he was largely instrumental in the development of the modern rod mill, and through his efforts the angle method of rail rolling and reduction was perfected. Aside from his activities in a super-visory capacity, it is through his work as a roll designer that Mr. Edwards will be best remembered. His intelligent application of the scientific principles of this branch of the industry made a deep impression. His oldest son, David J. Edwards, is now with the Texas Rolling Mill Company, Fort Worth, Tex., as consulting roll designer for its several plants.

Walter W. Griffin, vice-president and assistant general manager of the Nicholson File Company, Providence, R. I., died in that city May 15, after a brief illness. He first came to the company from his boyhood home, Columbus, Ind., in 1898, as a bookkeeper, and had advanced rapidly to a position of responsibility. He was also a director of the American Screw Company.

GEORGE E. AMES, at one time director of the Union Iron Works, San Francisco, and later representative in San Francisco of the Allis-Chalmers Company, died in San Francisco on May 11, aged 78 years.

#### May Enlarge Plant

The Sharon Steel Hoop Company, Sharon, Pa., which took over, several months ago, the Youngstown Iron & Steel Company, Youngstown, Ohio, is considering plans for making some additions to the open-hearth plant of the latter company, located at Lowellville. It is probable that within a month or two the company may decide to add one or two open-hearth furnaces to the plant, which would give it a total of six, if two are built.

# Pittsburgh and Nearby Districts

In order to give its customers the best possible service, the business of McKenna Brothers Brass Company, Pittsburgh, has been subdivided. In the future, all orders and correspondence relating to brass, brass goods and machine work should be addressed to McKenna Brass & Mfg. Company, Inc., P. O. Drawer 1249, Pittsburgh; for high-speed drills, bridge reamers and reamer drills, to McKenna Brothers, P. O. Drawer 1250, Pittsburgh, and for high-speed steel and tool steel, to Vanadium Alloy Steel Company, P. O. Drawer 1250, Pittsburgh.

A modified agreement between the Westinghouse Electric & Mfg. Company and the British Government that adjusted all differences under the rifle contract, was recently signed. This subject will be fully dealt with in the annual report of the company, to be issued May 26, and it is said the adjustment made is satisfactory in every way to the officials of the company.

On Tuesday, May 26, directors of the LaBelle Iron Works, Steubenville, Ohio, will meet for dividend action, and stockholders are expecting an increase in the dividend rate on the common stock. At the last dividend, an extra of 2 per cent was paid; this may be increased.

No. 12 open hearth furnace of the Youngstown Sheet & Tube Company at Youngstown, Ohio, is nearly completed, and will be put in operation about June 1. This gives the company a total of 12 100-ton open-hearth furnaces, making it the largest producer of open-hearth steel in the Youngstown district. The company has practically finished its Morgan 12-in. mill, but has not yet decided when it will be started.

The Railway Steel Bolt Company of Pittsburgh has been organized with a capital of \$5,000 by Joseph H. Bialas, T. F. Ryan and M. V. Shelley.

Minority holders of stock of the Westinghouse Machine Company, East Pittsburgh, who refused some time ago to turn over their stock on the basis of three shares of Westinghouse Machine stock for one share of Westinghouse Electric & Mfg. stock, have been advised that they will be given one share of Westinghouse Electric stock for one share of Westinghouse Machine stock. It is probable that the minority stockholders of the Westinghouse Machine Company, who refused to turn in their stock on the original offer will now do so on the new offer.

According to bank figures given out at Youngstown, the pay roll of that city for April was \$4,935,086, a new high mark. The distribution for the first four months of the current year was \$19,084,819, as compared with \$13,348.259 for the corresponding 1916 period. It is expected, with the 10 per cent wage advance of May 1 now in effect, the distribution for the current year will exceed \$60,000,000.

The Brier Hill Steel Company, Youngstown, Ohio, has closed a contract with the Mahoning & Shenango Railway & Light Company for the electric power to operate its two new plate mills now being built. The contract closed calls for a maximum of 10,000 hp. energy. The electrical equipment of the mill will include several motors, each of which will develop several thousand horsepower. In addition, there will be one or two motor-generator sets of about 1500 hp. each, which will be used to develop direct current for the electric cranes, and for other applications of direct current.

The Mount Pleasant Coke Company has bought about 250 acres of coal lands near Greensburg, Pa., on which it will start operations at once for the making of coke. The company will build a large number of beehive ovens, and is said to have paid upward of \$300,000 for the property.

The Elliott-Blair Steel Company, a corporation, has been organized with a capital of \$500,000, to take over the partnership that has existed for 20 years, under the name of the Elliott-Blair Steel Company at New Castle, Pa., maker of cold-rolled strip steel. The business will be continued as heretofore, and the company will not build a hot rolling mill as reported. The com-

pany is taking the plant of the Mercer Planished Steel & Iron Company at Mercer, Pa., which it intends to remodel for the manufacture of cold-rolled strip steel. The officers of the company are: George D. Blair, president and general manager; Noah W. Elliott, general superintendent; Thomas C. Elliott, superintendent annealing department.

The Reilly-Peabody Fuel Company, Frick Building, Pittsburgh, has secured a lease, and also part ownership, in a large coal property at Lenaconing, Md., formerly operated by the American Coal Mining Company, New York. The company has made application to the Western Maryland Railroad for rebuilding of the old branch of the Georges Creek and Cumberland Valley Railroad to connect this plot with the Western Mary. land Railroad, which would provide loading facilities for over 50 cars of coal daily. The mine is now producing 300 to 400 tons of coal per day, which is loaded on the Cumberland & Pennsylvania Railroad, and the Reilly-Peabody Fuel Company will act as exclusive agent for the entire output. The plot is said to contain over 1400 acres of the Georges Creek big vein of coal, and the mines will be equipped with the most modern machinery. The coal will be handled in the future under the name of the Georges Creek Coal Mining Company, an interest of the Reilly-Peabody Fuel Company. The latter concern is shipping about 15 cars of coke per day over the Western Maryland Railroad to Baltimore, where it is loaded for export, and is also handling the entire output of the Quality Coal & Coke Company, in Huntington county, Pa., which is producing about 200 tons of coal per day.

Alex Laughlin & Co., engineers and contractors, Pittsburgh, have received a contract for the building of six continuous heating furnaces, to serve the two new 34 x 84-in. and 38 x 132-in. plate mills, to be erected by the Brier Hill Steel Company, Youngstown.

The Trumbull Steel Company, Warren, Ohio, has placed an order with the Aetna Foundry & Machine Company for covers and rails for four soaking pit furnaces, to be installed in its new open-hearth steel plant now being built.

The Carbo-Hydrogen Company of America, Pittsburgh, has bought 1½ acres at Columbus, Ohio, to erect a plant for the manufacture and bottling of special gas used in steel cutting devices. The building will be of brick and steel construction.

If plans now under way by the creditors committee of J. V. Thompson, former coal and coke operator of Uniontown, mature, it is expected the unsecured creditors will be paid 40c. on the dollar on their claims in the near future. It is reported that the Hill interests in the Northern Pacific Railway have offered the creditors committee, \$5,000,000 for the \$13,000,000 unsecured claims, and the creditors committee will likely accept the offer.

The Firth-Sterling Steel Company, works at Demler, Pittsburgh, has bought 46 acres at Ambridge, Pa. The company has not made any plans whatever for the development of this property. It was owned for some years by the H. K. Porter Company, Pittsburgh, builder of light locomotives, which intended to use the ground for new works, but after buying the property changed its plans, and built additions to its shops in the Pittsburgh district.

The Knight Mfg. Company has been organized at Canton, Ohio, with a capital of \$25,000 to manufacture machinery, by G. F. Knight, C. H. Knight and C. E. Knight.

The Falls Rivet Company, Kent, Ohio, has been granted permission to increase its capital from \$200,000 to \$250,000.

The Ladd Water Tube Boiler Company, Pittsburgh, has been incorporated with a nominal capital of \$5,000. Interested in the new company is George T. Ladd, consulting and contracting engineer, Farmers' Bank Building, Pittsburgh. It is the intention of the company to erect a new plant in the Pittsburgh district for the manufacture of the Ladd water tube boilers, plans for which are now being made.

# Machinery Markets and News of the Works

# MILLIONS IN ORDERS WAIT

War Tool Needs Will Swamp Builders

Shops Choked with Business-Machines Now Billed at Price on Date of Delivery-Munition Plant for Asiatic Army

Contracts for millions of dollars worth of machine tools will be placed instantly upon receipt of orders from the Government to go ahead on war work. Every detail in the specifications has in most cases been settled and the purchase of equipment will be given by word of mouth, telegraph and any other method to get the very earliest possible delivery. Many manufacturers have over \$1,000,000 worth of such inquiries right up to the point of signing the papers.

Such a rush of purchasing will further postpone delivery dates, as all machinery manufacturers are operating to utmost capacity. The taking of tool orders to be billed at prices prevailing at time of delivery is now a rapidly growing practice in the trade. Tool builders are struggling to keep pace with requirements, but the effort is probably in vain. Makers of chucks and dies are unable to maintain their shipping schedules and are three to four months behindhand.

The wooden shipbuilding industry takes on greater activity every day, and yards are springing into life along the full stretches of our Atlantic and Pacific coastlines. Here, too, a huge bulk of orders, for woodworking machinery mostly, will be released by Gov-

On top of all this flood of business will undoubtedly be superimposed the unreckoned needs of engine builders, airplane plants, etc. The automobile makers, too, who have recently experienced a falling-off in the sales of pleasure cars, will also be fully occupied for some time with a demand for about 75,000 motor cars and trucks now pending for Army needs.

A list of about 33 tools for a munition plant for India to supply the British army in Mesopotamia has been issued at New York.

The Illinois Central has put out its requirements covering its various shop needs, which aggregate some 94 tools.

# New York

New York, N. Y., May 23, 1917.

Millions of dollars' worth of machine-tool orders are ready to be placed immediately upon the taking of the necessary action by Congress. One lathe manufacturer has requisitions munitions manufacturers for over 200 machines in this fritory, and estimates that his company all over the country is similar orders for 1000 machines worth \$1,000,000. With its already operating at top speed, the only result expected m the placing of such heavy requirements is a further apparent of delivery dates. It is known that some large nition companies expect definite Government action almost day now, and by the first of June it is believed that most this important business will have been placed.

While no price advances were recorded the past week, al manufacturers have declined to take orders for milling achines, and boring mill makers are rapidly approaching same condition. For some time they have been protecting selves by quoting high enough to meet all probable man

ket advances. Quotations in some cases are so high that dealers themselves at times doubt that the figures are Undoubtedly such manufacturers are trying to hold ranted orders off without prejudicing agents and customers. on punches and shears were recently increased about 20 per cent, but it is stated that present costs represent a greater figure than selling prices did  $2\frac{U_2}{2}$  years ago, even allowing a rather large profit. Lathe manufacturers report costs rather large profit. fully equal to selling price for the same period. crowded, pig iron at \$40 to \$45 per ton and shaft forgings at 12c. to 14c. per lb., some punch and shear makers hesitate to quote at all far ahead. Orders for large sizes, which weigh from 100,000 to 200,000 lb., are avoided as they fill up the plant and prove less satisfactory than smaller sizes weighing not over 15,000 lb. Crane makers now quote on the basis of contracts for materials at the premium for spot delivery. Shipments on chucks and dies are now 3 to 4 months off, and it is stated that manufacturers are failing to make promised Lathe equipment in some lines is from 5 to 6 weeks away. The General Electric Company's large requirements are asked for on a basis of 10 to 12 months' delivery. Such quotations have in some cases been refused as too far ahead, although as matters stand it is about the proper interval for handling the work. Quotations against this list undoubtedly will be made for billing at prices prevailing at time of shipment, and this kind of contract is expected to become more general from now on.

Aside from a slight tendency to hold off on placing orders, trade in general has been steady and without any new fea-Aeroplane plants are active buyers. The Sperry Gyre scope Company, Brooklyn, N. Y., bought several machines for general shop use. The Babcock & Wilcox Company has purchased a heavy punch and shear for its Bayonne plant. shey, Inc., 30 Church Street, New York, is in the market for machine-shop equipment for Cuba and there is another inquiry from that country for 25 lathes. The Holsam Company, 18 Broadway, New York, is asking for about \$20,000 of ship-yard machinery for export. Inquiry from abroad is good. Large numbers of machine tools continue to fill local ware-houses awaiting shipment abroad. A small percentage of them cannot carry the storage charges and are forced on the market. In most cases they are offered, however, at ridiculous premiums over the purchase price, and therefore do not sell readily, except where they coincide with an urgent demand for spot shipment.

Charles P. Perin, 2 Rector Street, New York, has before the trade a list of equipment for a munition plant for India to be used in supplying the British army in Mesopotamia. purchased and it Part of the equipment has already been is expected that the balance will be quickly contracted for. New or good second-hand equipment is specified, as follows:

Two 2-in. Hartness turret lathes or equal.

One 21/2-in. Hartness turret lathe or equal. One 72-in. x 16-ft. back-geared heavy lathe.

One 48-in. x 20-ft. back-geared heavy lathe. Two 36-in. Bullard vertical boring machines

Two 42-in. Bullard vertical boring machines

One 96-in. Bullard vertical boring machine.

One 60-in, new type horizontal boring machine

One 10-ft. or 80-in, planing machine

One 5 or 6-ft. planing machine. One 5-ft. planing machine.

Four 4-ft. planing machines

Two 36-in, standard plain vertical drill with revolving table.

One 26-in, traveling head shaping machine

One 28-in. Cincinnati type shaping machine.

Two 24-in, plain shaping machines

Two 12-in, slotting machines

One 24-in, slotting machine, One 28-in, slotting machine,

Two centering machines

One No. 4 Cincinnati milling machine or equal.

One No. 3 Cincinnati milling machine or equal

One 14-in. x 72-in. Brown & Sharpe universal grinding machine or equal.

All machine-tool builders are facing a small but steady drain on their working forces from enlistment, and this factor is taken into consideration by some companies in endeavoring not to further load up their shops with work. It is expected that the Government will take some measures to hold the men at work, although only a small percentage fail to realize their greater value in the shop.

The Niles-Bement-Pond Company, Pond Works, Plainfield, N. J., has awarded contract for the extension of its plant, consisting of a two-story brick addition, 85 x 125 ft., to be used as its new office building and to be directly across the street from its main machine shop. The first floor will be occupied by office, accounting, planning and routing departments; the second floor by the drafting, blue-printing and photograph departments. Steel is now being erected for an addition to the new erecting shop which was completed last December. It will be 75 x 288 ft., of concrete, brick, steel and glass construction, with wood block floor. It has already purchased equipment for a new power plant which will be erected later on. H. M. Cleaver is works manager.

The National Oven Company, manufacturer of baking ovens, Beacon, N. Y., has increased its capital stock from \$25,000 to \$50,000 for the development of its rack type oven.

The American Forging Company, recently incorporated with a capital stock of \$100,000, has bought a tract of land on the Erie Railroad at Clifton, N. J., for a plant. John H. Waters is president; John Travers, secretary and treasurer and S. S. Tompkins, vice-president and general manager.

The H. H. Shults Company, manufacturer of metallic furnishings, Gowanda, N. Y., has increased its capital stock from \$100,000 to \$155,000, for the enlargement of its business.

The Forsyth Metal Goods Company, manufacturer of household and hardware specialties, etc., Buffalo, N. Y., has moved into its new plant at East Aurora, N. Y., a suburb, and is now provided with ample floor space for the manufacture of its goods. The general offices will hereafter be at the plant. H. J. McCauley is president.

The Unitube Auto Radiator Corporation, 1139 University Avenue, Rochester, N. Y., has increased its capital stock from \$200,000 to \$500,000 in order to enlarge its manufacturing facilities. Some changes in the personnel of the company are also expected to take place at a coming meeting of the board of directors. The capacity of the plant will be greatly enlarged at once, as it is said that orders for more than \$250,000 worth of products are in hand. M. F. Cottrell is general manager.

Kensley Millbourn & Co., Ltd., 50 Pine Street, New York. exporter, has an inquiry from Australia for all kinds of sheet-metal working machinery, and in particular a guillotine shear to cut 20-gage black steel 6 ft. wide and a bending machine for similar material. W. J. O'Hara is assistant manager.

The Heller Brothers Company, 879 Mount Prospect Avenue, Newark, N. J., manufacturer of files and rasps, has awarded contract for a new four-story plant at 856-58 Summer Avenue, 45 x 100 ft., estimated to cost \$30,000.

The Passaic Valley Sewerage Commission, 31 Clinton Street, will receive bids June 26 for three 50-hp. enginedriven electric generator sets for the pumping station on the Newark meadows. Joseph H. Quigg is clerk.

Henry Loeffler, 297 Washington Street, Newark, N. J., has filed notice of the organization of Henry Loeffler & Son, to manufacture dies, tools, etc.

Victor A. Rohner, Newark, N. J., has acquired a twostory building at 400 Frelinghuysen Avenue, and will establish a repair plant for electrical work on dynamos, motors, armatures, etc.

D. B. Dunham & Son. Inc., 291 Halsey Street, Newark, N. J., manufacturer of automobile bodies, has acquired property on Miller Street for a new plant, replacing a former factory on Central Avenue, destroyed by fire. The building, 70 x 300 ft., will be used for sheet-metal work, blacksmithing, wood-working, trimming and other departments. A connecting office building is now being erected.

The E. C. Klipstein & Sons Company, Chrome, N. J., has awarded contracts for the erection of nine buildings at South Charleston, W. Va., for a new chemical plant. The company recently increased its capital from \$100,000 to \$1,000,000 to provide for this expansion.

The Keuffel & Esser Company, 300 Adams Street, Hoboken, N. J., manufacturer of surveying and engineering instruments, has commenced the erection of its proposed five-story addition to cost about \$25,000. It is understood that the plant will be devoted to the manufacture of range finders and kindred specialties.

The Everlasting Valve Company, Jersey City, N. J., has been incorporated with a capital of \$600,000 to manufacture valves and similar products. The incorporators are William F. Madill, John H. Allen and Conrad H. Koellhoffer.

The Dodge-Welden Iron Company, Jersey City, N. J., has been incorporated with a capital of \$540,000 to engage in iron milling work, etc. The incorporators are Harry Osborne, Andrew F. Meyer and John F. Simpson.

The Bound Brook Oil-Less Bearing Company, Main Street, Bound Brook, N. J., is planning for the immediate erection of a two-story foundry, 60 x 180 ft., at Lincoln, N. J.

The Richardson Scale Company, Colfax Avenue Athenia, N. J., manufacturer of weighing machinery, has increased its capital from \$175,000 to \$225,000 for expansion

Cornelius A. Cole, Hackensack, N. J., has incorporated in Delaware the Chimock Tire & Rubber Company, with capital of \$250,000 to manufacture tires. Other incorporators are Paul E. Britsch, Brooklyn, and Arthur R. Oakley, Pearl River, N. Y.

Roy T. Anderson and Charles R. Stewart, Ridgewood, N. J., have incorporated in Delaware the International Marine Welding Company, with capital of \$200,000, to operate a plant for marine welding and other mechanical work. David H. Wilson, Jr., Franklin Township, N. J., is also active in the company.

The City Council, Camden, N. J., has authorized a bond issue of \$15,000 for the establishment of a municipal machine shop. David Jester is president of the council; William D. Brown is city clerk.

The Paris Machine Corporation. New York, has been incorporated with a capital of \$50,000 to operate a tool-making and brass foundry works. H. Ellis, N. Sanders and R. Loudon, 2 Rector Street, are the incorporators.

The Eagle Wrought Iron Works, 580 Robbins Avenue, New York, has filed plans for a two-story extension at 580-2 Jackson Avenue to cost about \$10,000.

The American Gas Governor Works, Inc., 31 East Twenty-seventh Street, New York, has increased its capital from \$6,000 to \$200,000.

The J. G. White Engineering Corporation, 43 Exchange Place, New York, is preparing preliminary plans for a hydroelectric plant to be built in the Catskill Mountains by the Albany & Southern Railroad Company, Albany, at an estimated cost of \$3,000,000.

The Southard, Robertson Company, Peekskill, N. Y., A. H. Hughes, president, has let contract for a stove factory, two stories, to cost \$35,000.

The Bircher Company, Rochester, N. Y., has been incorporated with a capital stock of \$30,000 to manufacture mechanical and electrical apparatus, letter-opening machines, office specialties, etc. The directors are E. A. Bircher, H. W. Rippey, Rochester, and J. B. Abbott, Geneseo.

The Ithaca Gun Company, 123 Lake Street, Ithaca, has completed plans for factory addition, 72 x 95 ft., three stories, to cost \$40,000. George Livermore is president.

The Northern Ore Company, Edwards, N. Y., has let contract for a three-story addition to its ore mill on Front Lake Road.

The United Shoe Machinery Company, 205 Lincoln Street Boston, Mass., has completed plans for a new branch factory to be established at Binghamton, N. Y.

The National Wire Wheel Company, Geneva, N. Y., has awarded contracts for a two-story factory, 100 x 110 ft. W. W. Page is manager.

The Sheridan Iron Works, Champlain, N. Y., will build from private plans a machine shop, 50 x 100 ft.

Voland & Son, New Rochelle, N. Y., manufacturers of scales, will receive bids for an addition to its factory on Relyea Place.

The Carborundum Company, Niagara Falls, N. Y., is having plans prepared for three factory buildings to be added to its plant at Eighteenth Street and Buffalo Avenue. L. C. Call is manager,

The United States Fuse Corporation, Buffalo, capitalized at \$500,000, has been incorporated to manufacture electric fuses. appliances and devices. H. H. Baker, 52 Oxford Avenue; J. W. Charters, 540 Walden Avenue, and C. F. Booth, 52 Woodward Avenue, are the incorporators.

The Cohoes Rolling Mills Company, Cohoes, N. Y. L V. Mansell, manager, is having plans prepared for a pipe-finishing building, 50 x 200 ft., one story.

The H. A. Inman Company, Newark, N. Y., is having plans drawn for a machine shop.

The Victor Aluminum Company, Wellsville, N. Y., will rebuild its factory. Plans have been completed for a building 75 x 149 ft., one story. J. L. Rockwell is president.

The Barber Asphalt Paving Company, Buffalo, will build a one-story brick and steel addition to its machine shop at Walden Avenue and the New York Central Rallroad Belt

Three buildings of the extensive plant of the National Electrolytic Company at Niagara Falls, N. Y., were destroyed by fire May 18, causing a loss of \$300,000, principally upon stock. The operation of the plant will not be seriously interfered with. The destroyed buildings will be replaced.

# Philadelphia

PHILADELPHIA, PA., May 21, 1917.

The Philadelphia Paper Mfg. Company, Nixon Street, philadelphia, has awarded a contract for a one-story brick addition, 170 x 270 ft., at Nixon and Fountain streets, to cost \$15,000. Barclay White & Co., 1713 Sansom Street, are the contractors,

The American Insulation Company, Philadelphia, has been incorporated with a capital of \$100,000 to manufacture insulation specialties. B. T. Conwell, Jr., is the principal incorporator.

A one-story power house, 30 x 60 ft., will be erected by the Trees Box Company in connection with its new factory at Memphis and Tioga streets, Philadelphia. W. E. S. Dyer, Land Title Building, is engineer.

The Keystone Electrical Appliance Company, Philadelphia, has been incorporated in Delaware to operate a local plant for the manufacture of electric switches and kindred specialties, Stephen D. Large, C. C. Davis and Horace S. Jones, all of Philadelphia, are the incorporators.

The Badenhauser Company, Philadelphia, has acquired the boiler manufacturing plant of Joseph H. Roach & Co., Bridgeport, Pa., which specializes in the manufacture of allsteel water-tube boiler units. It is understood that the new owner is planning increased operations.

The proposed new addition to the plant of the Nice Ball Bearing Company, Land Title Building, Philadelphia, to be crected at Hunting Park Avenue and Henry Street, will provide an additional area of about 50,000 sq. ft. It will be one-story, of reinforced concrete. The William Steele & Sons Company, 34 South Fifteenth Street, Philadelphia, is the architect.

A one-story brick and concrete power house, 65 x 100 ft., to cost \$30,000, will be erected by the Theodore Presser Company, 1712 Chestnut Street, Philadelphia, at its printing works at Yeadon, Pa.

The Sunlight Building & Oil Company, Philadelphia, is said to have acquired about 200 acres near Bristol for the construction of a large shipbuilding works. The site embraces the former Stackhouse & Lang properties, with frontage on the Delaware River.

The Philadelphia Electric Company, Philadelphia, has filed plans for the erection of a new one-story brick boiler house,  $10 \times 104$  ft., estimated to cost \$60.000, at its electric plant, Robbins Street and the Delaware River, Tacony.

The Scofield Engineering Company, Commercial Trust Building, Philadelphia, has prepared plans for a power house for the Dunnellon Phosphate Company, Furnedina, Fla., to be of brick and concrete, 200 x 300 ft.

Barger, Bains & Munn, Inc., Jasper and Adams streets, Philadelphia, will build a plant at Bloomsburg, Pa., for the manufacture of paper boxes to handle the output of its besiery mill there. It is planned to have the new plant in operation in July.

The Imperial Porcelain Company, Trenton, N. J., has organized a subsidiary company, to be known as the Newtown Porcelain Works. The former plant of the Newtown China Company, Newtown, Pa., has been acquired, and will be used for the manufacture of electric porcelain specialties by the newtown, and operated as an auxiliary to the main plant at Trenton. Frederick A. Duggan is president.

It is reported that the Remington Arms Company, Chester, Pa., will remodel its plant and equipment to handle a contract from the Government.

The Lincoln Brass Foundry Company, Chester, Pa., has been incorporated with a capital of \$5,000 to operate a local plant. W. F. Mathues, Swarthmore, Pa., is one of the Granizares

The proposed new roundhouse and shop buildings of the Philadelphia & Reading Railroad to be erected at Reading, Pa., will cost about \$1,000,000. The roundhouse will have about 27 tracks and the work will include the construction of a large turntable.

The Reading Steel Casting Company, Reading, Pa., manufacturer of Iron and steel castings, will build a one-story addition,  $40 \times 60$  ft.

The Traylor Engineering & Mfg. Company, Allentown, Ps. manufacturer of machinery, has acquired the former pant of the Enterprise Mfg. Company, near Cornwells, Pa., consisting of buildings and 82 acres of property with large frontage on the Delaware River. The consideration is resorted to be about \$500,000. The new owner is planning to equip the works to handle shipbuilding on a large scale. It is said that a contract is to be secured from the Government for the immediate construction of 15 freighters. Samuel W. Traylor is president.

The Bellwood Foundry & Machine Company, Bellwood, Pa has been incorporated with a capital of \$20,000 to operate

the former plant of the Hellwood Mfg. Company, manufacturer of iron and steel castings, recently acquired by George C. Bland, Tipton, Pa., the principal incorporator.

A new addition to the plant of the Harrisburg Welding. Brazing & Machine Works, 94 South Cameron Street, Harrisburg. Pa., has been completed. Machinery and equipment has been installed for die-making, toolsmithing and general automobile machine work. A. A. Hayward and J. C. Garverick are in charge.

The Pressed Steel Company, North Pennsylvania Avenue, Wilkes-Barre, Pa., manufacturer of iron and steel plates, sheet-steel piling, etc., is having plans prepared for a one-story reinforced-concrete addition, 60 x 80 ft., to cost \$10,000.

The Maccar Truck Company, Scranton, Pa., is taking bids for a one-story reinforced-concrete factory, 70 x 300 ft., to cost \$90,000. A power house for plant operation is also planned. Duckworth Brothers, Coal Exchange Building, Scranton, are the architects.

The Salem Brass & Iron Mfg. Company, Salem, N. J., manufacturer of cast-iron pipe and fittings, etc., which is putting its Hess plant at Bridgeton, N. J., in shape for operation, is particularly in need of exhaust tumblers. Most of the other equipment is on hand except a few electric motors which are now being purchased.

.The New Jersey Shipbuilding Company, recently incorporated in Delaware with a capital of \$1.000,000, has leased land from David Baird, president of the First National Bank of Camden, N. J., situated at Gloucester City, N. J., upon which it will erect a large shipyard.

# New England

BOSTON, MASS., May 21, 1917.

Several large inquiries for machine tools from plants expecting to engage in Government work are being held back because of the uncertainty in regard to the time when these orders will be placed and the amounts of the contracts to be undertaken. One inquiry for equipment, amounting to over \$50,000, for a plant that is to make gun mounts, has been practically closed by a large machine-tool manufacturer. One of the principal Government plants in New England has received bids for a 20-ft. boring mill, an 8-in. floor borer, a 16 x 12 x 40-ft. planer and a 120-ft. crankshaft lathe. It is expected that this contract will be placed immediately.

A great demand still continues for grinding machines, universal milling machines, boring mills and large radials and drill presses. There is beginning to be a large business in sight for the makers of wood-working machinery, as inquiries are beginning to come into the market from the many old shipyards that are being put into shape for the building of the wooden vessels called for by the Government program. Yards that have been idle for nearly 50 years are preparing to play a part in the execution of the contracts for ships of the standard type that has been decided upon.

It is reported that the New England Westinghouse Company, which has large plants at Chicopee Falls and East Springfield, Mass., is taking steps that indicate that it intends to enter upon the manufacture of rifles for the Government. It is greatly increasing its force of tool and gage makers and at the same time is laying off some of the production crews that have been busy on Russian rifle contracts.

The United States Mfg. Company, Springfield, Mass., has been incorporated with authorized capital stock of \$500,000, to manufacture machine guns, etc. The directors are Willse Lawrence, president; James Campbell, South Deerfield, treasurer; and Stuart M. Robson.

The Risdon Tool & Machine Company, Naugatuck, Conn., which recently increased its capital from \$50,000 to \$100,000, has awarded a contract for an addition, 40 x 90 ft., one story,

The Harley Company, Springfield, Mass., has awarded a contract for a new plant on Forge Street, East Springfield. It calls for four one-story buildings: A die shop and finishing shop, 50 x 400 ft.; a stock room and finishing department, 50 x 220 ft.; a drop forge shop, 80 x 200 ft.; and a building, 50 x 220 ft., to house a die-storage room, repair shop, blacksmith shop, carpenter shop, and a blower and compressor room.

Cobb & Drew, Kingston, Mass., tack and rivet manufacturers, lost six buildings by fire May 16 with a loss estimated at \$50,000. The main building and much of the machinery were saved.

The Kim Distributing Company, Boston, Mass., has been incorporated with authorized capital stock of \$50,000 to manufacture shock absorbers for motor vehicles. The directors are Benjamin K. Hall, president; Robert M. Clark, Newton Center, treasurer; and A. F. Brewer.

The Eastern Machine Screw Company, New Haven, Conn.,

has awarded a contract for an addition, 50 x 146 ft., two stories.

Edwin Hills. Plainville, Conn., hardware manufacturer, has awarded a contract for a building,  $44 \times 90$  ft., three stories, with a wing,  $50 \times 75$  ft., to replace the plant recently destroyed by fire.

The Worcester Foundry Company, Worcester, Mass., has been incorporated with authorized capital stock of \$50,000. The directors are Frank Hayes, president; Michael E. Keeley, Waterbury, Conn., treasurer; and Thomas J. Finn.

The Bridgeport Brass Company, Bridgeport, Conn., has secured a permit to build an addition, 65 x 280 ft., with a wing, 38 x 40 ft.

# Baltimore

BALTIMORE, MD., May 21, 1917.

Day & Zimmerman, engineers, 611 Chestnut Street, Philadelphia, have been retained by the Baltimore Dry Docks & Shipbuilding Company, Baltimore, Md., to prepare preliminary plans for proposed extensions in its shipbuilding works. The company has taken an option on about 20 acres of property in the vicinity of its present plant at Locust Point, and plans for the erection of four shipbuilding berths with auxiliary shop structures. Negotiations are now under way with the city for permission to erect the necessary piers, etc. It is proposed to build a railroad tunnel to connect the present plant with the new site. The estimated cost of the work is \$2,000,000. Holden A. Evans is president of the company.

Adam F. Bautro, L. E. Hoffman and John Stonewall, all of Baltimore, Md., have incorporated in Delaware the A. F. Bautro Aerial Navigation Corporation with a capital of \$1,000,000 to manufacture aeroplanes and other aircraft.

The Newport News Shipbuilding & Dry Dock Company, Newport News, Va., is planning for extensive additions and improvements in its plant, to cost about \$800,000. The work will include an addition to the machine shop and extension to the foundry for steel castings. It is also proposed to construct new shipbuilding berths. The company is now taking bids for the erection of a four-story brick addition, 50 x 200 ft. H. L. Ferguson is president.

The Seaboard Airline Railway, Portsmouth, Va., has awarded a contract for extensions to its local shops, including a new coach and truck shop, 100 x 250 ft., and an auxiliary structure, 30 x 92 ft., including the installation of new yard cranes.

# Chicago

CHICAGO, ILL., May 21, 1917.

The Illinois Central Railroad, A. C. Mann, Chicago, purchasing agent, has issued a list of machine-tool and shop equipment requirements consisting of 94 items, bids to be submitted not later than June 1. Most of the machinery is for delivery at its Burnside shops, Cook County, but some is wanted at nearly all of the company's shops, including those at Champaign, Mattoon, Clinton, Freeport, Ill.; Waterloo, Iowa; Paducah, Ky.; Memphis and Jackson, Tenn.; McComb and Vicksburg, Miss.; Harahan and Baton Rouge, La. The company has massed its requirements, but whether or not it will buy in view of present prices and deliveries remains to be seen.

A war contract which apparently is supplementary to that given to the Root & Van Dervoort Engineering Company, East Moline, Ill., has been placed with the Lindermann Machine Company, Muskegan, Mich., and calls for 3-in. naval gun mounts. The contract placed with the first-named company called for 3 and 4-in. naval guns and 4-in. mounts.

Automobile manufacturers are doing but little buying, due to a falling-off in the purchasing of pleasure cars. Should they be called upon to turn out munitions there would be a sudden turn in their demands upon machine-tool dealers. In a few cases sellers of machines which were desired for Government work have asked industrial customers to accept a postponement of deliveries, and in practically every instance cheerful assent was given. Second-hand tools have been moving a little more quietly, principally for the reason that the more desirable machines have been absorbed. One or two dealers report but little demand for the tools they have in stock, while the call for standard machines on which deliveries are far ahead is as strong as ever and unimproved.

The one-story shop, 80 x 120 ft., to be erected for the Edward Valve & Mfg. Company, East Chicago, Ind., will be of brick, with tile roof and concrete floor for the machine room, and will contain compressors and a power plant. Bids are being taken by W. F. Branitzky, architect, 64 West Randolph Street, Chicago. It will also build a one-story steel foundry, 80 x 140 ft., to cost \$30,000.

Bids will be taken by W. F. Branitzky, architect, 64 West Randolph Street, Chicago, on a two-story mill and reinforced

concrete factory, 120 x 200 ft., on Ravenswood Avenue, near Montrose Avenue, for the N. G. Saal Company, Chicago, manufacturer of tools and hardware specialties.

Plans have been prepared for a three-story addition, 50 x 100 ft., to the factory of the C. H. Hanson Company, 307-209 Eric Street, Chicago, manufacturer of rubber stamps and stencils, to cost about \$25,000. C. O. Hansen, 852 North Dearborn Street, is the architect.

B. Heller & Co., manufacturing chemists, 3925 Calumet Avenue, Chicago, will erect a three-story factory in Prairie Avenue, near Thirty-eighth Street, to cost about \$60,000. J. C. Llewellyn, 38 South Dearborn Street, Chicago, is the architect.

Plans are being drawn for an addition, 100 x 750 ft., to the plant of the Universal Tractor Company, Waukegan, Ill. It is stated the work will be done by the Stone & Webster Construction Company, Boston, Mass.

The United States Wire Mat Company, Decatur, Ill., has awarded the contract for a two-story and basement brick factory, 40 x 120 ft., to cost \$20,000. It has outgrown its present quarters.

The Pan-American Motor Company, Decatur, Ill., will erect a factory to cost about \$30,000.

The St. Paul Foundry Company, St. Paul, Minn., is expending \$100,000 on improvements to its plant, to be completed about Sept. 1. Frame buildings have been replaced with fireproof structures, the blacksmith shop has been enlarged, and a new machine shop, 112 x 160 ft., has been built, as well as an addition to the foundry, 70 x 90 ft. A new foundry, 110 x 480 ft., will be added. The remodeled plant will cover an area 100 x 700 ft. New machinery and electrical equipment will be installed. The company is understood to have contracts with a maker of by-product coke ovens and with a manufacturer of motor-driven tractors.

The plant of the Topeka Foundry & Machine Works, 311 Jackson Street, Topeka, Kan., was damaged by fire May 10.

The W. & L. Foundry Company, Norfolk, Neb., has selected a site at Norfolk, owned by the Union Pacific Rallroad, for a new plant. The plans call for the immediate erection of a building, but difficulty is being experienced in getting sufficient laborers.

The Crown Tire & Rubber Company, Ralston, Neb., has let the general contract for a new factory estimated to cost \$32,000, to Winters & Thomas, Ralston.

#### Milwaukee

MILWAUKEE, WIS., May 21, 1917.

Many shops report new business being booked in such volume as to allow little opportunity to catch up on deliveries and shipments are still far advanced. The urgency for deliveries has been accentuated recently by the requirements of metal-working shops holding Government contracts. No large-lot orders have made their appearance, although individual bookings show increases over single or small-lot orders. Orders for replacements constitute the bulk of new business. Tool builders give preference to the demand which bears a direct relation to the preparedness program of the Government, but every effort is being made to satisfy the earlier requirements of regular customers.

The Plumbers' Woodwork Company, Algoma, Wis, in erecting a foundry addition, 30 x 50 ft., and making other improvements, including the installation of several new molding machines and a new brass melting furnace. 8. H. Newman is president.

The Milwaukee Structural Steel Company, Milwaukee is erecting a one-story steel and brick shop addition, 55 x 65 ft., at the foot of Nineteenth Street.

The Badger Tool Company, Milwaukee, has been incorporated with a capital of \$5,000 by J. W. Reichert, Nesse C. Nelson and Gustav O. Teske.

The Jaeschke Brothers Foundry Company, 3028 Locust Street, Milwaukee, has increased its capital stock from \$25.000 to \$100,000 to cover additions now being completed and to accommodate the growth of the business.

The Davis Mfg. Company, Milwaukee, awarded the general contract for the one-story foundry addition, 150 x 261 fts to the Robert L. Reisinger Company, Milwaukee, instead of to Arthur W. Riesen, 200 University Building, as previously noted

The Western Steel & Iron Works, DePere, Wis., is making improvements in its plant and offices.

The Charles W. Fish Lumber Company, Birnamwood Wis., is completing work on its new sawmill at Antigo, Wis. and will soon be ready for bids for the construction and equipment of a steam-generating plant, 35 x 115 ft.

The Case Storage Company, Racine, Wis., has been incorporated with \$5,000 capital by officials of the J. I. Cast Threshing Machine Company, Racine, to handle storage and warehousing details for the parent company.

Helle City Mfg. Company, Racine, Wis., maker of agricultural implements, has plans for a four-story manufacturing and warehouse addition, 80 x 200 ft.

The Peninsular Power Company, Chicago, is reported to have elected a site on the Brule River at Florence, Wis., for its proposed hydroelectric plant, to be constructed and equipped this year. Details are not yet announced. Max Sells, Florence, is interested.

The C. J. Frost Company, Stevens Point, Wis., fishing tarkle manufacturer, has awarded the contract to Charles Packard for a two-story brick and concrete factory addition, ag x 100 ft.

# Indianapolis

Indianapolis, Ind., May 21, 1917.

The Electric Controller Company, manufacturer of heating apparatus, Indianapolis, has increased its capital stock from \$10,000 to \$250,000. William E. Munk is president.

The Sirrine Beet Slicer Company, Indianapolis, has been incorporated with \$20,000 capital stock to manufacture vegetable cutters and machinery. The directors are Orton N., M. E. and A. Sirrine, all of Chance, Mont.

The Banta Motor & Phonograph Company, Elkhart, Ind., has been incorporated with \$100,000 capital stock to manufacture talking machines, etc. The directors are Harvey F. Banta, A. Elmer Manning and Christ C. Byers.

The Art Wares Mfg. Company, Indianapolis, has increased its capital stock from \$50,000 to \$100,000.

The Indiana Power & Water Company, Bloomfield, Ind., has increased its capital stock from \$200,000 to \$500,000.

The Lushbough-Jordan Tool & Machine Company, Elkhart, Ind., has increased its capital stock from \$5,000 to \$50,000.

The Barsmith Ice Machine Company, Fond du Lac, Wis., will move its plant to Monticello, Ind. The company's head-quarters are in Chicago.

The city waterworks plant at Martinsville, Ind., was destroyed by fire April 16. The plant contained pumps and power machinery for street lighting. The loss was \$25,000.

The plant of the American Car & Foundry Company at Jeffersonville, Ind., is concentrating work on getting out supplies for the quartermaster's department, including mess ranges, cots, tables and other articles, which can be manufactured in foundry or machine shop. In the meantime regular work is set aside.

The Peerless Machine Works, Muncle, Ind., has been incorporated with \$10,000 capital stock to manufacture brass, iron and wood products. The directors are Charles B. Atherton, M. M. and G. L. Atherton.

The Indiana Metal Novelty Company, Vincennes, Ind., has increased its capital stock from \$7,500 to \$25,000.

The Cudahy Chemical Company, Gary, Ind., will make additions to its plant to cost \$500,000.

The Metals Refining Company, Hammond, Ind., has increased its capital stock from \$25,000 to \$200,000.

The Mills Electric Company, Lafayette, Ind., has been incorporated with \$100,000 capital stock to manufacture automobile parts and accessories. The directors are Byron J. Mills. Herbert A. Keller and Eldon L. Lewis.

The McClintock Mfg. Company, Elwood, Ind., has been incorporated with \$10,000 capital stock to manufacture machinery. The directors are Michael Meyer, Joseph G. Fields and Daniel T. Jenner.

Rochester, Ind., has appropriated \$8,000 for a turbine pump with electric auxiliary, for the municipal waterworks plant.

The Security Tube Company, South Bend, Ind., has been incorporated with \$150,000 capital stock to manufacture autotires and tubes. The directors are William P. Furey, Joseph W. McInerny and Hugh B. McVicker.

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The Ely Railway Rail Joint Company, Indianapolis, has been incorporated with \$50,000 capital stock to manufacture railway rail joints. The directors are B. B., G. V. and R. P. Ely.

The H. Clauss Mfg. Company, Tipton, Ind., whose plant was destroyed by fire March 3, is rebuilding the structure, which was a four-story building, 200 ft. long and is also adding a forging room, 40 x 60 ft. and a press room, 40 x 80 ft. The plant will be electrically equipped throughout, power being obtained from the municipal plant. National gas processes will be used in the manufacturing of shears, scissors and manicure tools. The company will particularly specialize in scissors and shears.

The O. K. Machine Company, Fort Wayne, Ind., will construct a two-story addition. The first floor will contain punch presses while the second floor will be used as a machine shop.

The Zenite Metal Company, manufacturer of automobile molding, stampings, dies, bearing metals, etc., West and Ohio streets, Indianapolis, is building an addition to its factory and installing new presses to double its present capacity for stamped steel work.

#### Detroit

DETROIT, MICH., May 21, 1917.

Manufacturers are placing very few orders for machine tools, although business in this section is exceptionally good. No large machines are being ordered and the demand for smaller ones has fallen off. Orders for future delivery are very few. The number of new shops opening for business has decreased greatly. Delivery on milling machines is not promised until next year but lathes and grinding machines can be obtained in less time. Labor conditions are good, although unskilled labor is at a premium. Automobile factories are running to capacity and there is apparently no let up in general manufacturing lines.

The Chalmers Motor Company's Canadian plant at Windsor, Ont., which was destroyed by fire will be replaced by a two-story plant now under way on a six-acre site recently purchased by the company. The location is in what is known as the No. 2 factory district.

The Saxon Motor Company, Detroit, has leased the twostory brick factory, 60 x 100 ft., at 78-88 Isabella Street from the Daniel W. Smith Company, for use as an experimental and engineering building.

The Belding Foundry Company, Belding, Mich., has elected the following officers: John C. Jenkins, president; Raymond A. Stokoe, vice-president; Arthur B. Johnson, secretary, and William F. Sandell, treasurer. High grade wrought iron castings will be made, specializing in engine cylinders cast en bloc, manifolds, radiators and other accessories.

The Juliet Iron Company, Marquette, Mich., has been organized with a capital stock of \$100,000, all of which has been subscribed and paid in property.

At the annual meeting of the J. C. Wilson Company, Detroit, it was voted to increase the capital stock to \$1,000,000 to take care of the increase in the motor truck business and provide for further expansion.

The Chelsea Steel Ball Company, Chelsea, Mich., has been organized with a capital of \$75,000 and will build a plant near the Chelsea Screw Company. Timothy F. Callahan will be manager.

\* The Briggs Mfg. Company, Detroit, maker of automobile bodies, has increased its stock from \$50,000 to \$750,000 to enlarge its manufacturing facilities.

The Dail Steel Products Company, Lansing, Mich., has broken ground for a factory addition, 72 x 120 ft., and intends to make automobile accessories and do a general stamping business. E. I. Dail is president and general manager: James Westwater, Columbus, Ohio, vice-president; M. Ray Potter, Lansing, secretary, and F. N. Arbaugh, treasurer.

A company to be known as the Evart Mfg. Company, capitalized at \$30,000, has moved from Mayville, N. Y., to Evart. Mich., where it will manufacture whiffletrees. George A. Glerum is president; William Latta, vice-president; Fred Davy, secretary-treasurer.

The Challenge Machinery Company, Grand Haven, Mich. is building an addition to its factory, 100 x 170 ft. It will be used for light foundry work and equipped with molding machinery.

The Independent Motors Company, Port Huron, Mich., has closed negotiations with the Chamber of Commerce at Conneaut, Ohio, by which it will move its plant there from Port Huron.

#### Cleveland

CLEVELAND, OHIO, Mẩy 21, 1917.

The demand for machine tools for Government and industrial plants to fill Government orders has become more active. The Recording & Computing Machine Company, Dayton, Ohio, has an inquiry out for about 100 automatic screw machines and 50 hand screw machines, the placing of this order being contingent on securing a Government contract for munitions. Several orders for small lots of machines were placed by the Government the past week and bids were taken Saturday for a number of machines, including 6 turret lathes for the Bremerton, Washington Navy Yard. The demand for automatic screw machines for export, particularly to Italy and France, is quite active. Outside of the call for machines for war work the market is quiet. No new inquiries of any size came out the past week. Second-hand machinery is more plentiful than for some time. The demand for molding machines and other foundry equipment is heavy.

The Cleveland Pneumatic Tool Company, Cleveland, has placed contracts for the erection of a new plant on East

Seventy-eighth Street, near that of the Cleveland Machine & Forging Company. It will be of brick and steel, 100 x 350 ft., with an L. One section will be two stories and the remainder one story. The company will move into its new plant about Sept. 1, and will have about three times its present capacity. Orders have been placed for the additional machinery required.

The Parish & Bingham Company, Cleveland, will shortly begin the erection of an extension, 56 x 500 ft., to be used as a shipping department so that all loading of cars will be done under roof. Two tracks will run through the building.

The Blomquist-Eck Machinery & Mfg. Company, Cleveland, has acquired a site at the Nickel Plate Railroad and East 152nd Street, and will at once begin the erection of a new plant, increasing its present capacity.

The Ferry Cap & Set Screw Company, Cleveland, will shortly begin the erection of a two-story addition, providing 56,000 sq. ft. of floor space, to be used as a heat treating department.

The Baxter Gear Cutting & Mfg.. Company, Cleveland, has placed a contract for the erection of a one-story machine shop, 60 x 148 ft.

The Co-operative Machine Company, Cleveland, has been incorporated with a capital stock of \$10,000 by F. A. Maxwell, John H. Flaherty and others.

The Steel Car Company, Cleveland, placed its new plant in operation last week for the repair of wooden cars. It will build another unit later to repair steel cars.

The Dunham Company, Berea, Ohio, will enlarge its foundry by the erection of an addition, 100 x 170 ft., containing two 84-in. cupolas. Considerable foundry equipment will be required, including handling machinery.

The General Electric Company, Erie, Pa., is planning an addition to its gray iron foundry that' will about double its present capacity.

The Bucher-Smith Company, East Palestine, Chio, has been incorporated with a capital stock of \$18,000 by R. H. Bucher, Arthur W. Bostock, Henry V. Smith and others, to manufacture machinery.

The Matthews Boat Company, Port Clinton, Ohio, is planning some additions to its factory.

The director of public service, Canton, Ohio, will receive bids May 28 for electrically driven centrifugal pumping equipment in either two or three units, with a capacity of 15,000,000 gal. per 24 hr. against a 60-ft. head.

The Toledo Incinerator Company, Toledo, Ohio, recently incorporated with a capital stock of \$50,000, has established a plant at Summit and Buffalo streets, for the manufacture of incinerators.

The Collier Motor Truck Company, Sandusky, plans to place contracts in about 60 days for the erection of an addition to be used for assembling purposes.

#### Cincinnati

CINCINNATI, OHIO, May 21, 1917.

Both the domestic and foreign inquiry for machine tools is now showing some improvement. Orders placed by domestic, firms the past few days for lathes, boring mills and milling machines are ahead of the previous week. A number of local machine-tool builders have adopted the rule of taking orders for machines to be delivered several months ahead with the proviso in all contracts that the machines are to be billed at the prevailing price at time of delivery. This action was taken to guard against any possible loss due to advancing costs of both material and labor.

It is reported that many inquiries for wood-working machinery have been received lately from shipbuilding firms, but few of these have yet developed into business. The demand for portable electric drilling and grinding machines was never better.

The R. K. LeBlond Machine Tool Company, Cincinnati, has awarded contract for a reinforced concrete garage, 20 x 330 ft., to be constructed adjoining its new plant on Madison Road.

The Charles Boldt Company, Cincinnati, has applied for a permit to erect a power plant and a sorting room addition to its new paper plant now in course of construction.

The Diem & Wing Company, Cincinnati, paper and roofing manufacturer, will erect an addition to its plant on Eggleston Avenue, mostly for a power plant.

The Ahrens-Fox Fire Engine Company, Cincinnati, will erect a two-story brick addition to its plant on Colerain Avenue for storage purposes, etc.

Definite confirmation has now been received as to the building plans of the Acme-Greaves Machine Tool Company, Cincinnati. It has purchased an 8-acre site in Oakley and will breet a plant of sufficient size to take care of the Acme Ma-

chine Tool Company and that of the Greaves-Klusman  $\ensuremath{\mathrm{Ma}}_a\text{-}$  chine Tool Company.

The Worthington Pump & Machinery Corporation, Elmwood Place, Cincinnati, is having plans prepared by Bert L. Baldwin, architect, for a six-story pattern storage addition to its plant, 60 x 180 ft., of reinforced concrete.

The Steel Products Company, Springfield, Ohio, has awarded contract to the Richey-Werts Company, Dayton, Ohio, for a three-story addition to its plant, 50 x 100 ft.

The Victor Rubber Company, Springfield, Ohio, will make still further additions to its plant to double its present capacity.

The Rittman Machine Company, Rittman, Ohio, has been incorporated with \$25,000 capital stock by J. C. Young and others and will erect a machine shop and foundry.

The Nye Foundry Company, Marietta, Ohio, will electrify its plant, running all machines with motors. Contract for the work has been let.

The O.K. Machine Company, Fort Wayne, Ind., will erect a two-story addition to its plant.

The General Screw Company, Cincinnati, has been organized by J. A. Knecht and others, and is equipping a plant at Sixth and Baymiller streets for the manufacture of screws,

The Scott-Spencer Automatic Tool Company, Cincinnati, has been incorporated with \$25,000 capital stock by Thomas J. Scott, L. R. Spencer and others. A building in Hyde Park has been leased which will be equipped to manufacture automatic screw machines.

The item in The Iron Age of May 3, giving the location of the Steel Products Engineering Company as Dayton, Ohio, was in error. The correct address of the company is Springfield, Ohio.

# The Central South

LOUISVILLE, KY., May 21, 1917.

The tendency to curtail buying to a basis of necessity is noted by manufacturers and distributors in this section. Inquiries continue, especially for boilers, power plant equipment, and motors, but are not followed by orders as often as formerly. A local plant has taken an order for triple expansion engines for the Government. Oil well supplies and coal mining equipment are in increasing demand. Garage equipment is not as active as heretofore. Electric light and power plant projects are taking form and prices are being asked for. Coal is slightly lower this week, due to embargoes at Louisville and Cincinnati, except for utility plant supplies.

The Adairville Lighting Company, Adairville, Ky., will establish a hydroelectric plant on the south fork of Red River, and proposes to let contracts Oct. 15. A water turbine of 100-hp., 6-ft. head, to drive a 2300-volt, three-phase 60-cycle generator and transmission equipment will be purchased R. E. Brian, president, is asking prices.

The Perry Lumber Company, Lexington, Ky., has been incorporated with capital stock of \$40,000 by W. F. and J. T. Perry and K. N. DeHaven.

T. R. Smith and N. J. Crocker, Asheville, N. C., have purchased for \$17,000 the plant of the American Mantel Mfg. Company, Knoxville, Tenn., which they will re-equip.

The Casey-Hedges Company, Chattanooga, Tenn., will build a reinforced concrete addition, 92 x 113 ft., to cost \$35,000 to house its machine shops.

M. B. Parker, 1912 Oak Street, Chattanooga, Tenn., is asking for description and prices on a new or used 24-in. drill press, back-geared, in first-class condition.

The Lucey Mfg. Corporation, Chattanooga, Tenn., has taken out permits for the erection of additions to its machine and blacksmith shops to cost \$8,500, and a power plant to cost \$6,500.

The Kingsport Packing Corporation, Kingsport, Tenn., has been incorporated with a capital stock of \$100,000. The officers are John N. Johnson, president, Gate City, Va., and J. C. Stone, Kingsport, secretary.

The Newcomb Mantel & Furniture Company, Nashvilla. Tenn., has been incorporated with a capital stock of \$25,000 by Z. D. Baird, J. S. Wright, John Godley, Jr., and others to make wood mantels and furniture.

The Farm Power Company, Knoxville, Tenn., has been incorporated with capital stock of \$5,000 by Norman B. Morrell, M. T. Devault, Fred J. Connes and others.

The recent fire at the plant of the Walsh & Welder Boiler Company, Chattanooga, Tenn., burned the old boiler shop and machine shop and slightly damaged the blackmid and flanging shops; the latter departments, however, put back in operation, and within the next two weeks the plant will be running again as usual. A. H. Chapman becretary and treasurer.

# Texas

Austin, Tex., May 19, 1917.

Duliness was indicated the past week in the machinery and tool trades. It is believed, however, this is only temporary and that prospects for the summer are unusually bright.

The Beatrice Milling Company, Whitewright, will enlarge its flour mill and install new machinery at a cost of about

It is announced by the department of public works of the Federal Government of Mexico that plans have been adopted for the construction of extensive port works and a deep-water harbor at Bahia Espirito, Santo Bay, Quintana Roo, Mexico, to cost about \$5,000,000 gold. In order to give the new port a railroad outlet, an extension of the United Railways of Yucatan will be built to it, a distance of about 100 miles.

The Livingston Oil Company, Tulsa, Okla., has purchased the oil refinery near Beaumont of the United Oil & Refinery Company which it will dismantle and remove to Tulsa. A larger plant will be built, requiring much new equipment.

The Texas Chemical Company, Houston, has been incorporated with a capital stock of \$100,000 and will construct a fertilizer manufacturing plant. Judge F. H. Ward and E. W. Townes, Houston, and S. Peiser, San Francisco, are the incorporators.

The Paris Saddlery Company, Paris, will enlarge its manufacturing plant by installing additional machinery at a cost of about \$50,000.

# St. Louis

St. Louis, Mo., May 21, 1917.

Business uncertainty is still evident, but a distinctly better feeling is noted as to the future and more inquiries are reported by machine tool dealers. Continued improvement is looked for.

The Mosberger Lumber Company, St. Louis, has been incorporated with a capital stock of \$50,000 by Jacob and Herman J. Mosberger and Anton E. Anhart and will equip a planing and saw mill.

The Fulton Iron Works, St. Louis, has completed its incorporation under the laws of Delaware with a capital stock of \$5,000,000, \$2,000,000 of which it will use in its plant at St. Louis and for other operations. The additional capital will be utilized for extensions, etc., as needed.

The Standard Mechanical Mfg. Company, St. Louis, has been incorporated with a capital stock of \$12,000 by Harry G. and Charles W. Wall and Charles W. Wall, Jr., to manufacture machinery.

Morris & Co., Chicago, Ill., have completed plans for the erection of a cooling plant at St. Louis to cost about \$100,000.

The General Automatic Scale Company, St. Louis, has been incorporated with a capital stock of \$100,000 by Henry C Schaper, Richard Scheid and William J. O'Day to manufacture automatic scales,

The plant of the Macon Motor Car Company, Macon, Mo., was burned May 16 with a loss of \$350,000. Plans for reconstruction have not been determined upon. H. C. Finck, St. Louis, is president.

The Universal Wire Fence Mfg. Company, Kansas City, Mo., has been organized by R. W. Stern, A. W. Witt and Allie Steen to manufacture wire fencing.

The Mid-State Coal & Mining Company, St. Louis, George L. Brown, president, 1407 Market Street, is in the market for gas engines, hoisting equipment, pumps, coal cutting machinery, screens, tipple scales, etc.

The Western Cartridge Company, Alton, Ill., will proceed with extensive enlargements which have been deferred because of the labor situation.

The Earle Compress Company, Earle, Ark., has been incorporated with a capital stock of \$50,000 by F. W. Reisinger, N. A. Kramer, H. A. Morrison and others and will equip a cotton compress.

The Myers Stave Mfg. Company, Corning, Ark., has increased its capital stock by \$50,000 to extend its capacity.

The Citizens Coal & Mining Company, Miami, Okla., H. E. Courson of Dewar, Okla., secretary, is in the market for bollers, engines, pumps, and other equipment.

The Farmers' Cotton Oil Company, Ada, Okla., C. E. Wingo, general manager, will equip a cotton seed oil mill. The capital is \$100,000.

Billings, Okla., has voted \$10,000 for electric light plant senerating equipment.

The State Capitol Commission, Oklahoma City, Okla., A. N. Leecraft, secretary, will erect a power house and heating plant for the State Capitol.

The Durant Milling Company, Durant, Okla., has been

incorporated with a capital stock of \$100,000 by J. Lloyd Ford and J. H. Wahl of Shawnee, Okla., and T. F. Gwaitney of Madill and will equip a plant,

The New Orleans & Northeastern Railroad, A. A. Woods, superintendent, New Orleans, La., will rebuild its burned machine shops at Meridian, Miss.

The Miller Lumber Company, Booneville, Miss., has been incorporated with a capital stock of \$50,000 by E. T. Miller, T. D. Rees and others.

The Stillwater-Crosby Lumber Company, Canton, Miss., has increased its capital from \$200,000 to \$350,000 to extend its plant.

The Unit Construction Company, contracting engineer, Title Guaranty Building, St. Louis, will design and construct an industrial village for the Walsh Fire Clay Products Company at its plant at Vandalia, Mo., including the erection of a power house, hot floors, etc. The total cost of the plant will be \$500,000.

### San Francisco

SAN FRANCISCO, CAL., May 15, 1917.

The machine-tool trade the past two weeks has been heavier, owing to the more general return of confidence among buyers. The call is best around San Francisco, with southern California still reporting quietness for all lines except shipbuilding. General shop orders have formed most of the trade here, with the rail and water transportation companies a close second. Advances were quoted on a number of small tool lines.

The Fageol Motors Company, San Francisco, is to begin work on the first unit of its factory at Oakland, on the east shore of San Francisco bay. The auto and truck plant will ultimately cost \$1,000,000.

The Industrial Equipment Company, Oakland, Cal., is to erect a factory for the manufacture of a universal differential for motor cars. It will cost \$50,000.

Purchasers whose names have not been divulged have bought the Robertson Shipbuilding Company's yards at Benicia, Cal., and the Mechanical Installation Company, San Francisco, for \$200,000. A new set of ways will be put in at the Benicia yard.

The Gastmann Shipyards, Eureka, are to lay two more ways and will purchase machinery for their operation.

The Los Angeles Shipbuilding & Dry Dock Company, Los Angeles, has been awarded contracts for eight steel vessels, each carrying 8800 tons of cargo, for delivery during

The Oliver Mfg. Company, Oakland, Cal., has started work on the first unit of its plant to cost \$500,000. W. K. Powell, San Francisco, president of the Doak Gan Engine Company and the California Cap Company, is president. Iron and steel products will be manufactured.

The Pacific Electric Company, Los Angeles, is to spend \$150,000 on new shops at San Bernardino, Cal., for its eastern division.

The Chevrolet Motor Company is to erect a new factory at Salt Lake City, Utah.

The Barnes & Tibbits Shipbuilding Company, San Francisco, has been organized with an announced capital of \$100,000 to take over the Pacific Shipyard Company's plant at Alameda Point, Cal., owned by Captain W. G. Tibbits, Two new sets of ways will be put in.

The L. & B. Mfg. Company, Los Angeles, manufacturer of motor-truck attachments and four-speed transmission equipment, is building a new plant at Fifty-fourth Street and Boyle Avenue, on a site of about two acres. It is expected to have a section of the first unit in operation in June. H. P. Bidelman is president of the company, which was formerly known as LaMunyon & Bidelman; C. B. McCall is secretary and treasurer.

The Moreland Truck Company, 1701 North Main Street, Los Angeles, manufacturer of motor trucks, has awarded a contract for a new one-story machine shop, 35 x 134 ft., at its local plant. The C. J. Kubach Company, Merchants' National Bank Building, is the contractor.

The Angelus Carbon Company, Los Angeles, is having plans prepared for a new plant at Huntington Park, to consist of two one-story buildings, 125 x 270 ft., and 25 x 35 ft., respectively, the latter to be used as an office. A. Dudley, 338 Bradbury Building, is the architect.

The United States Spring Company, Los Angeles, recently incorporated to take over and operate the business of the A. & F. Spring Company, is planning the erection of a new local plant on Los Angeles Street, 100 x 150 ft. It is also negotiating with the Moreland Truck Company, 1701 North Main Street, for property in the vicinity of its new motor truck plant now being constructed at Burbank, as a site for a

main plant. This new works will specialize in the production of chrome-vanadium, carbon and alloy steels for spring manufacture. Philip Riedele is president and Herbert Athons is manager.

The Fontana Power Company, Fontana, Cal., represented in Los Angeles by A. B. Miller, 201 Merchants Bank Building, is having plans prepared for a hydroelectric power station near Rialto, to have an initial capacity of 18,000 kw. Mc-Keen & Miller, Monadnock Building, Chicago, are the engineers.

The Western Auto Electric Corporation, Los Angeles, has completed the erection of a plant at 1324 South Hope Street, 50 x 100 ft., to be devoted to making lighting, starting and ignition systems. It is fully equipped for such operations. A. J. Tobey is general manager.

H. A. Johnson, Redlands, Cal., is organizing a company to establish a plant for the manufacture of a patented orchard tractor. It is said that the initial plant will cost about \$35,000.

The Yuba Mfg. Company, Marysville, Cal., manufacturer of gold-dredging machinery, will establish a plant at Benicia for the manufacture of agricultural implements.

### The Pacific Northwest

SEATTLE, WASH., May 15, 1917.

Shipbuilding plants in this section are refusing practically all private offers for wooden ships until it is learned just what will be expected of them according to the Government's program. The suggestion of Major-General Goethals that the shipbuilders of the Northwest form a shipping pool, with an agent to handle its affairs, has met with hearty approval. At least six established plants in Seattle are ready to begin construction on short notice. Capt. J. F. Blain, the Government representative, has established offices in Seattle. Shipbuilders state that private contracts are to be had in large numbers, and as soon as the Government work is provided for these will be accepted.

Northwestern lumbermen are considering specifications for lumber to a total of 740,000,000 ft., submitted by the Government, the inquiry including 600,000,000 ft. for barracks and training camp buildings, and 140,000,000 ft. for the construction of the Government ships. Lumbermen in considering the call have pledged themselves for 200,000,000 ft. of the lumber required for quarters, and the total amount of 140,000,000 ft. for ship lumber. Everything else will be sidetracked, in an effort to get this latter amount out as needed. There is much speculation as to the price to be charged for ship timber, but it is generally stated that lumbermen will ask \$40 per thousand. The Government's desire for extra long material will cause a large amount of waste in cutting. In many cases all contracts for lumber have been refused to private parties except for strictly cash, and future orders are not being considered.

Northwest lumbermen are making vigorous protest against the proposed increase of 15 per cent by the transcontinental lines on movement of forest products from the north Pacific coast to Eastern points. The increase is declared ruinous to the industry.

Following the tremendous growth of the shipbuilding industry in the Northwest, smaller industries in Seattle have taken a big spurt the past few months. Metal-working plants. manufacturers of fixtures, hardwood plants, foundries and The shipkindred trades are increasing in great numbers. building boom has resulted in a similar boom for the plants which produce special parts of vessels. No plant is now too small to receive important orders, because of the rapid pace of construction work. Larger plants are sub-contracting with smaller firms for work, so that they may be free to make new contracts. It is stated that the increase in the number of employees in manufacturing plants in the last year is more than 100 per cent. The beginning of the fishing season has marked great activity in the smaller boat-building plants. Manufacturers of marine engines or parts have had a heavy rush of business. The utilization of heavy-oil enocean-going craft has stimulated machine shops. It is stated that the most serious need for the shipyards of the Northwest at present is enlarged factories for producing first-class marine engines, especially the Diesel type. greatest activity and increase among the smaller foundries and metal-working plants in Seattle is noted. Tool-making has also made important strides in the past year, and this branch is being crowded to capacity.

Puget Sound salmon canneries and the 100 Alaska canneries are spending \$26,000,000 this year for new plants, improvements, extensions, supplies and machinery, as compared with \$14,000,000 for last year.

John A. Gabel, president of the Pacific Mutual Door Company, Tacoma, has recently received from Washington, D. C., an inquiry as to the ability of local factories to manufacture 240,000 doors, representing an expenditure of \$350,000, to be used in finishing army barracks in the West.

The Pacific Oil Mills Company, Seattle, plans construction of a soya bean oil plant on the Duwanish Waterway to cost \$250,000. H. Meyer is manager.

Work has been started on the first buildings of the Tacoma Ship Company, Tacoma, Wash., estimated to cost \$\$0.000.

The Ames Shipbuilding Company, Hoge Building Seattle, has had plans completed for a two-story warehouse, 48 x 90 ft., to cost \$6,000.

The Nelson & Kellez Shipbuilding Corporation, Erickson Building, Seattle, has had plans prepared for a two-story frame mold loft, 50 x 200 ft., at its proposed new shipbuilding plant to cost \$5,000.

The Anacortes Shipbuilding Company, Anacortes, Wash, has been incorporated for \$250,000 and will construct a wooden ship plant. Joseph A. Sloane, Seattle, is one of the incorporators and will have charge of the plant installation.

The Seattle Construction & Dry Dock Company, Seattle, has received contract for making repairs to the steamship Congress of the China Mail Steamship Company. It will be practically rebuilt, with the exception of the hull. New machinery will be installed. The repairs will cost \$800,000.

The G. M. Standifer Construction Company, Portland, Ore., has been incorporated with capital stock of \$900,000 to construct wooden ships. The incorporators are I. M. Standifer, L. B. Menefee and G. C. Frisbie.

The Florence Shipbuilding Company, Florence, Ore., J. Fred Larsen, Portland, principal owner, will start work immediately on a plant with four ways, and room enough for four more. The Tidewater Mill Company's sawmill at Florence will resume operations to supply lumber to the shipbuilding plant. It will first construct a steamer of 1,000,000-ft. cargo capacity for its own use.

The Washington Handle Company, Tacoma, Wash, will build extensions to its plant to more than double the capacity. The new building will be 60 x 100 ft. The present building will be remodeled and new machinery installed to make the capacity of the plant 50,000 broom handles per day.

Sommarstrom Brothers, Oakland, Cal., are preparing plans for a new shipyard at Columbia City, Ore., for constructing wooden ships.

The Boeing Airplanes Company, Seattle, has made its first shipment of airplanes for the Government. The machines are all made here except the engines. The factory is to be enlarged to produce larger machines for war service.

Louis Paquet and Charles S. Miller, Kelso, Wash., have let contracts for their shipbuilding plant in Kelso for the construction of river craft.

Lawrence M. Eubanks, attorney, Portland, Ore., member of Phipps & Eubanks, represents Eastern interests that plan the construction of a wooden shipbuilding plant in either Tacoma or Portland. Several sites are reported under consideration.

The National Shipbuilding Company, Tacoma, Wash., has approximately \$1,000,000 worth of work on hand at present. It will begin work shortly on two 330-ft. wooden ships to cost \$300,000 each. F. Garrett Fisher is president.

Grant Smith & Co., contractors, Seattle, have leased a site in Vancouver, B. C., and will construct a shipbuilding yard for the construction of wooden ships for the Canadian Government. The site has room for six ways, and work on six hulls will be started at once. Inquiries have been made through the Seattle office for tools and equipment. It is rumored a similar plant will be built in Seattle.

The Puget Sound Navy Yard at Bremerton, Wash., will receive bids on May 28 for four 10-ton hammer-head ship-building cranes, to be used in connection with the new ammunition ship to be built.

#### Canada

TORONTO, ONT., May 21, 1917.

Not only has there been no falling off in contracts for the lighter shells, but the expenditure of money for munitions in Canada at present is larger than at any period of the war, according to a statement made by J. W. Flavelle, chairman of the Imperial Munitions Board, Ottawa, who states that the great majority of Canadian factories have not yet reached their maximum output. He also states that the development in the factories in England has reached the point where Canada's assistance is not required at the present time in the manufacture of 8-in. and 9.2-in. shells, although large contracts are being placed for the smaller shells.

The Galt Building Products, Ltd., 3 Royal Bank Building Galt, Ont., recently incorporated with a capital stock of \$40,000, has purchased 8 acres nearby and has taken an option on 35 more. It intends to erect a plant there for the manufacture of brick, tile, flooring, etc. E. S. Tolmie president; Albert Gillies, vice-president, and J. Rennie, servetary and treasurer.

The Imperial Steel Corporation, Collingwood, Ont., will be arganised to take over the plant of the Imperial Steel & Wire Company as a going concern. The Imperial Steel & Wire Company has outstanding \$214,610 in preferred and \$600,005. m con mon stock.

The Kingston Shipbuilding Company, Kingston, Ont., is in need of extended facilities and is therefore negotiating for the plant of the Kingston Foundry Company, which has been doing considerable work for it.

Ma Kinnon, Holmes & Co., Ltd., Sherbrooke, Que., posently received a large order for steel bow plates for troop srows to be constructed in Canada.

The Canada Newfoundland Lumber Company, Montreal, has been incorporated with a capital stock of Alphonse W. Blouin and others to operate mills, machine shops, etc., for manufacturing lumber, etc.

The Burroughs Adding Machine of Canada, Ltd., Windsor, Ont. has been incorporated with a capital stock of \$250,000 by Andrew J. Lauver, Charles G. Chapman, George W. Evans and others, all of Detroit, Mich.

The Pacific Mills Company, Ltd., who have almost completed their large paper plant at Ocean Falls, B. C., will build a second and larger unit, to be erected directly across Link River from the present plant. The second unit will be about 10 per cent larger than the present plant and have a capacity of 225 tons per day. A. B. Martin, Vancouver, B. C., is managing director.

The Canadian Vickers, Ltd., Montreal, has taken out a permit for a drydock to cost \$87,400.

Construction work is under way on the erection of a fac-tory for the Montreal Box Board Company, Montreal, to cost

The National Potash Corporation, Ltd., in which Allan Grauel, Kitchener, Ont., is active, will establish a plant at Gravenhurst, Ont., to consist of a battery of blast furnaces. It has taken over the plant formerly operated by the Graventhus Crushed Granite Company, together with a deposit of feldspar. The crushers will have a capacity of about 200 tons per hr. The furnaces to be installed are designed by P. McCaffery, Toronto. Sewer pipe, tile and paving brick will also be manufactured.

The Steel Company of Canada is having new concrete docks built at its ore docks at Point Edward, Ont. undertaking will cost \$20,000.

Bids are now being received for a booster pump of 750 gal. per min by the Town Council, Paris, Ont. G. H. Armstrong

Bids are being received by the secretary-treasurer of St Lambert, Que., for the installation of a horizontal shaft centrifugal pump, electric motor and switchboard. H. A. beau is the engineer.

Tilbury East Township, Ont., proposes to build and equip pumping station at a cost of \$15,000. J. J. Newman, Wind r, is the engineer.

The Steel Lockers, Ltd., London, Ont., manufacturer of ults, safes, etc., will build a factory at London to cost 5,000. U. A. Buchner, 574 Waterloo Street, is manager

F. G. Mitchell, care the London Engine Supplies, Ltd. ondon, Ont., will build an auto repair shop at a cost of

The Hout Rifle Automatic Attachment Company, Richand, Que., will build a factory.

The New Brunswick Power Company, Dock Street, St. B., is making arrangements for the erection of a as plant to cost \$500,000.

The Exolon Company, Thorold, Ont., proposes to build addition to its plant at a cost of \$200,000. Kalmus, Comock & Westcott are the engineers.

Thomas V. S. Dickson, Glasgow, Scotland, and A. D. Swan, fontreal, are looking for a site at St. John, N. B., for the ection of a steel shipbuilding plant.

The Gidley Boat Company, Ltd., Penetang, Ont., is in the trket for a stiff-legged derrick, 6 to 10 tons, with 35 to

Temple Godman has awarded the contract to Hazelton alin, 303 Donalda Building, Winnipeg. Man., for a motor sembling plant to cost \$20,000.

Alexander Gorvock, Lewis Street, Ottawa, has been sarded contract for the erection of a work shop for the ty Council to cost \$18,000.

The Falmouth Shipbuilding & Transportation Compan d, organized last February, has secured a site at Falmouth, 8, for a shipbuilding plant. The directorate of the comby is as follows: E. S. Armstrong, president; A. P. Clark, cretary and treasurer; Fred W. Dimock and others, Fal-

# Government Purchases

WASHINGTON, D. C., May 21, 1917.

Bids will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, until June 5, sched ule 1129, for two sets of large motor-driven plate bending rolls, and schedule 1133, for miscellaneous 2½-in, suction and discharge plunger type pumps for Philadelphia; schedule 1133, for miscellaneous 3½-in. suction. 3-in. discharge horizontal centrifugal pumps for Brooklyn, similar 3-in. suction and discharge pumps for Norfolk, similar 21/2-in, suction and discharge pumps, plunger type, for Mare Island, and similar 2-in, suction and discharge plunger type pumps for Boston; until date not set, schedule 1137, for one reversing planer equipment for Washington; schedule 1138, for one 2500-lb. single-frame steam hammer for Brooklyn; schedule 1159, for eight 14, 16 and 20-in, swing x 8-ft, bed motor-driven lathes, three horizontal and vertical duplex milling machines, three universal milling machines, one double over-arm universal milling machine, one heavy-type vertical spindle 62-in. x 20-in. cross milling machine, one medium type vertical spindle 28-in. x 13-in. cross milling machine, two half universal radial drill presses, and two back-geared pillar crank motor-driven shaping machines, all for Washington.

Sealed proposals will be received under specification 2388, until 11 a. m., May 28, at the Bureau of Yards and Docks, Navy Department, Washington, for furnishing and installing one 80-ton bridge crane, one or more 10-ton bridge crane one 5-ton bridge crane, four 5-ton wall cranes and five 2-ton electric hoists and hand-power travel bridge cranes for the new foundry at the Norfolk Navy Yard.

Bids were received at the Bureau of Supplies and Accounts, Navy Department, Washington, May 15, for supplies for the naval service as follows

#### Schedule 1017, Ordnance

Class 211. Washington, D. C.-Horizontal bench milling machines-Bid 22, \$444, 224, \$400 and \$510; 273, \$560.10

Class 212, Washington D. C .- 40-in. lathes-Bid 156, \$12,251; 221, \$15,050 and \$15,450.

Class 213, Hingham, Mass.—Engine lathe and chuck— Bid 163, \$944, 206, \$1,432 and \$1,398; 221, \$1,402; 224, \$1,383. \$1,367, and \$1,285

Schedule 1019, Construction and Repair

Boston-Drop hammer-Rid 206, \$7,200; 221, Class 222.

\$9,470; 338, \$11,756 and \$14,036.
Schedule 1020, Construction and Repair
Class 223, Philadelphia—Beveling machine—Bid \$9.600

Schedule 1035, Construction and Repair

Class 244. Puget Sound—Bolt-threading machine—Bid 184, \$1,535,30: 206, \$1,255, \$1,270 and \$1,122. Schedule 1036, Steam Engineering Class 251, Pearl Harbor—Engine lathe—Bid 206, \$1,805.70;

233, \$1,153,

Alternate A--Same, f.o.b. San Francisco-Bid 206, \$1. 765.70: 233, \$1,122

Alternate B-Same, f.o.b. works-Bid 206, \$1,755.70;

#### Schedule 1040, Construction and Repair

Class 261, Philadelphia—Punch and shear machines— Bid 31, \$3,590; 59, \$5,165 and \$4,215; 131, \$5,100 and \$4,500; 221, \$5,370; 224, \$3,705, \$3,727 and \$3,736; 286, \$3,575, 326, \$3,865.

Class Philadelphia-Planer machines-Bid 131, 86 845

Class 263, Philadelphia-Press machine with jib; alter

Class 264, Prinderphia—Press matchine with job.

\$8,400; alternate; 311, \$10,000 and \$8,800.

Class 264, Norfolk—Punch and shear machines—Bid 31, \$3,340; 59, \$6,900; 131, \$5,600 and \$5,200; 221, \$7,030; 224, \$5,100, \$5,056 and \$5,099; 286, \$3,950; 354, \$7,750.

Class 265, Norfolk-Jogging machines-Bid 131, \$11,444. Class 266, Philadelphia-Frame-bending machine-Bid 311, \$600; 314, \$400.

Class 267, Philadelphia—Punch or shear machine—Bid 31. Class 264, Fritadespina Function of shear machine—Bid 31, \$2,515; 59, \$5,950; 131, \$4,850 and \$4,350; 221, \$5,900; 224, \$3,105, \$3,085 and \$3,124; 286, \$3,510; 326, \$3,845 and \$3,085 and \$3,124; 286, \$3,510; 326, \$3,845 and \$3,085 and \$4,100; 221, \$5,400; 326, \$4,050; 354,

Alternate-Bid 59, \$3,960

Class 269, Norfolk and Philadelphia-Planer machine Bid 285, \$21,550 and \$20,400.

Class 270, Norfolk and Philadelphia-Punch and machines—Bid 31, \$3,040; 59, \$4,600; 131, \$4,550 and \$4,275; 221, \$4,720; 224, \$3,200, \$3,227 and \$3,226; 286, \$3,100; 326, machines \$3,755; 354, \$5,900.

Class 211, Norfolk—Punch machines—Bid 31, \$1,770; 131, \$3,325; 221, \$2,605; 224, \$1,785, \$1,808 and \$1,832; 286, \$2,200; 326, \$2,742; 354, \$1,880.

Class 273, Philadelphia—Horizontal drill press—No bids. Class 274, Philadelphia—Hydraulic beam bending press— Bid 286, \$7,000; 314, \$4,500.

Class 275, Philadelphia-Rotary shear machine-Bid 242. \$7.000

Schedule 1038, Ordnance

Class 281, Washington-One boring and turning lather Bid 156, \$24,020; 221, \$22,630 and \$23,110. Schedule 1057, Steam Engineering

Class 411, Boston-Boring, drilling and milling machine-Bid 181, \$7,080; 221, \$6,745 and \$7,585. Schedule 1060, Ordnance

Class 422, Washington-Planer-Bid 163, \$15,068; 221, \$12,925.

Schedule 1061, Ordnance

Class 423. Washington-Automatic screw machines-Bid 30, \$1,088

Class 424, Washington-Automatic screw machines-Bid 30, \$1,373; 215, \$1,375

Class 425, Washington-Wire feed screw machines-Bid 30, \$743; 310, \$550; 324, \$258. Class 426, Washington—Automatic screw machines—Bid

\$1,737; 163, \$3,060; 215, \$1,850. Class 427, Washington—Screw Machine—Bid 30, \$940; 273, \$797.50; 310, \$770; 324, \$258.

Class 428, Washington—Automatic screw machines—Bid \$1,618.18; 215, \$1,850. Class 429, Washington—Automatic turret screw machine—

Bid 60, \$2,176.25; 215, \$2,300. Class 430, Washington—Polishing and finishing ma-Class

chines—Bid 30, \$192.50; 324, \$96.50.

The names of the bidders and the numbers under which they are designated in the above list, are as follows:

Bid 22, Aumen Machinery Company; 30, Brown & Sharpe Mfg. Company; 32, Bertsch & Co.; 59, Cleveland Punch & Shear Works Company; 60, Cleveland Automatic Machine Company; 77, Carroll Electric Company; 131, Hilles & Jones Company; 156, I. H. Johnson, Jr., Company; 163, Kemp Machinery Company; 181, Lucas Machine Tool Company; 184, Landis Machine Company; 206, Manning, Maxwell & Moore, Inc.; 215, National-Acme Company; 221, Niles-Bement-Pond Company; 224, D. Nast Machinery Company; 233, Pratt & Whitney Company; 242, Quickwork Company; 255, Republic Bag & Paper Company; 266, Sherritt & Stoer Company; 273, Swind Machinery Company; 285, William Sellers & Co., Inc. 286, Southwark Foundry & Machine Company; 310, Warne & Swasey Company; 311. R. D. Wood; 314, Watson-Stillman Company; 321, Walker & Heisler; 324, F. E. Wells & Son Company; 326, Williams, White & Co.; 338, Buffalo Foundry & Machine Company; 354, Henry Prentiss & Co., Inc.

#### NEW TRADE PUBLICATIONS

Power Transmission Machinery.-Hill Clutch Com pany, Cleveland. First number of "Hill Clutch Equipment." Describes and illustrates installations of friction clutches, collar-oiling bearings, rope drives, etc. In this particular number the installation at the plant of the Cleveland Galvanizing Works, in which power is supplied by a 75-hp. gas engine through rope drives and clutches to four floors and the basement, is described, the text being supplemented by several engravings and diagrams.

Scrap Reclaiming Press.—Southwark Foundry & Machine Company, Philadelphia. Circular. Describes a compressed air operated press for reclaiming scrap material and repairing steel cars. The description of the press is supplemented by a number of engravings showing it in use for various operations and a condensed table of specifications is included. An illustrated description of the press appeared in THE IRON AGE Nov. 23, 1916.

Steam Specialties .- John E. Angell Steam Specialtie Company, Inc., 5100 West Sixteenth Street, Cicero, Ill. Bul-letin No. 105. Devoted to a line of steam specialties which includes feed water heaters, ammonia, oil and steam separators, etc. Views of the various specialties are given with a brief statement of the work they are designed to do and the sizes in which they can be supplied.

Heat Regulating System.-Gold Car Heating & Lighting Company, 17 Battery Place, New York City. Booklet. Illustrates and describes a thermostatic heat regulating sys tem for controlling the temperature. The special feature of this system, which is operated entirely by electricity from the lighting circuit, is the elimination of an air compres air lines, etc. The two parts of the system, an electric thermostat placed on the wall and a special electro-magnetic valve on the radiator, are illustrated and described at some length. A chart showing the even temperature maintained by the system is included.

Wagon Londing Machines.—George Haiss Mfg. Com-pany, 141st Street and Rider Avenue, New York City, Pam-

phlet. Illustrations and descriptive matter explain the oper. ation of a digging type of wagon loading machine for handling rock, iron and steel turnings, broken stone, coal, etc. Illustrations of the machine in use with various kinds of material are presented with brief descriptions of the work being done. A condensed table of specifications of the loaders is presented, together with comparative data on the cost of loading the material by hand and by machine

Pinch Bars .- Central Pinch Bar & All Machinery Company, 611 Sixteenth Street, Beaver Falls, Pa. Folder. Points out the advantages of using a pinch bar for moving cars around industrial establishments. The various features of the bar such as ability to move heavy weights and the elimination of danger of accidents to persons using it are pointed Several views of the bar are presented and a number of testimonial letters are included.

Drop Forged Tools.-J. H. Williams & Co., 57 Richards Street, Brooklyn, N. Y. Spanish catalog. Presents illustrations, brief descriptions and condensed specification tables of a line of drop forged tools, including wrenches of all types tool holders, limit gages, lathe dogs, clamps, pipe wrenches Illustrations showing the general character of the line of drop forgings produced by the company are also included

Metal Lockers .- Edward Darby & Sons Company, Inc. 233 Arch Street, Philadelphia. Catalog No. 43A. Covers in of planished steel lockers that can be furnished in standsizes or built to meet special requirements. The genera specifications of the lockers are given and illustrations of the various styles, which are made with either expanded meta solid sides, are presented with brief descriptions of them Mention is also made of lockers for material as well as those intended for clothing.

Leather Belting .- Charles A. Schieren Company, 30 Ferry Street, New York City. Catalog. Size, 6 x 9 in.; pages, 40 Gives illustrations and brief descriptions of leather belting and an extensive line of leather products, including belacing, lace leather, round leather belting, rawhide rope leather and belt cement and dressing. Views of the differe operations in the manufacture of the several products as presented and tables of the various sizes of each product that an be supplied are presented together with reproductions the trademarks.

Air Compressors and Pneumatic Drilling Machine. -Ingersoll-Rand Company, 11 Broadway, New York City. Two catalogs. The first, No. 3311, covers a duplex steam-drive compressor for supplying air for general industrial application The construction of the compressor is gone into some length and the text is supplemented by numerous e gravings of the various parts. Tables of sizes and capacitis are included. The second, No. 8507, superseding No. 8407, is concerned with the Little David pneumatic drilling machi The various types of the machine are illustrated with recor mendations as to the particular character of work for which they are adapted. A number of views of the tools in use an included with condensed specification tables of the different

Welded Stellite Tools .- Ready Tool Company, Bridge Relates to some new forms of port. Conn. Circular. Stellite tools in which the user secures the material in th form of a solid forged high-speed tool, a tool holder of diamond point shape in which the outside or hard edge of the Stellite is used at all times and Stellite bits with a carbo The several forms are illustrated and tables of the sizes of each that can be supplied are included.

Grinding Machines .- Webster & Perks Tool Com Circular. Shows a standard two-wheel Springfield, Ohio. grinding machine that is made in either floor or bench types A condensed table of specifications of the machine is inclu

Friction Clutches .- Moore & White Company, Philade phia. Pamphlet. Deals with a line of high-speed friction clutches that are made in a number of different sizes for " as pulleys, with an extended sleeve or as a cut-off coupli After a detailed description of the clutch, which is supply mented by several engravings of the different parts, dime sion and specification tables of the various sizes are P sented. Mention is made of a line of cast-iron pulleys as shifters for the clutches. An illustrated description of the shifters for the clutches. loose-pulley type of clutch appeared in The Iron Age, Dec

Traveling Water Screens - Link-Belt Company, Ti Booklet No. 36 ninth Street and Stewart Avenue, Chicago. Points out the advantages of using a traveling water so for condenser intakes to prevent trash of various kinds for entering the condensers. The advantages claimed for the construction are freedom from clogging and freesist. screen surfaces are always accessible and self-cleaning the full opening of the intake is always available, the amount power consumed is small and an ample water supply insured. The booklet is a reprint of an article appearing in Practical Engineer and the text is supplemented by number of the supplemented by number of th ous halftone and line engravings.

# Sinte

A SINTERIN has been put into a the Mingo of the Carnegie St pany which emb of the latest ments and improin machinery and ment for the cal handling of and producing The number of thas been reduce system of electranged on the couse of overhead dling in one sh

\*Engineer, C. O.



Over Size Chute at nently; Prox